

RAILWAY AGE

WORKBOOK OF THE RAILWAYS

THE INDUSTRY'S ONLY WEEKLY NEWSMAGAZINE

YOU CAN'T CURE WITH A "CRUTCH"



Timken® bearings eliminate the cause ... give a sure Cure for the Hot Box Problem

*...and they pay for themselves
over and over and over in operating
and maintenance savings*

THE hot box problem can't be cured by "crutches"—devices attempting to improve friction bearing performance. The only *sure* cure is Timken® tapered roller bearings. That's because they eliminate the *cause* of hot boxes—the friction bearing itself.

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Timken bearings eliminate the hot box

problem because they *roll* the load. They don't *slide* it. There's no

IT'S THE metal-to-metal friction, as TAPER with friction bearings. And the tapered roller design makes

Timken bearings the only journal bearing you can depend on to *cure* the hot box problem *and* bring operating costs down to a minimum. The taper in Timken bearings prevents lateral movement. There's no scuffing or skewing; bearings last longer. There's no pumping action to pump lubricant out of the seals; less lubricant is used. Costly diesel wheel slip is prevented.

We even make our own bearing steel to be sure it's the finest. No other U. S. bearing maker does.

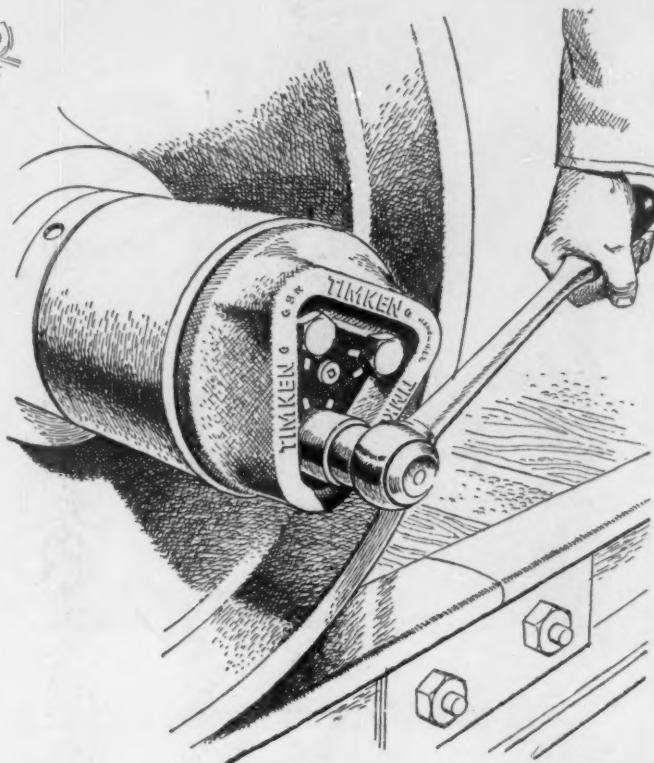
When you add up the costs of buying and maintaining "crutch" devices that never cure the hot box problem, you find that the difference in price between friction and

roller bearings is smaller today than ever. And one major American railroad uses a practical conversion plan

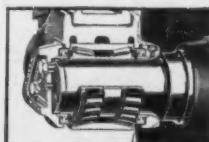
MAKING CONVERSION PRACTICAL that can reduce costs even more. Every freight car of this railroad coming into its shops for major re-

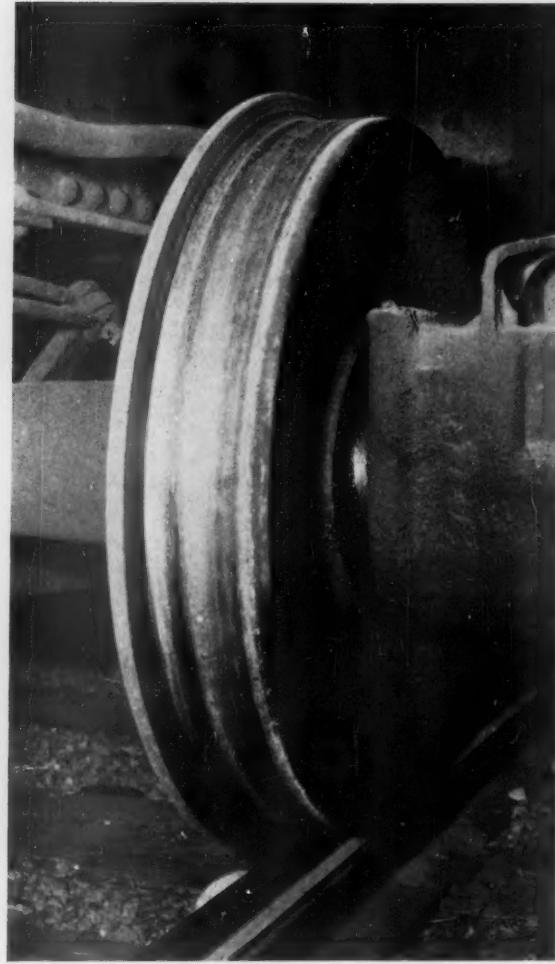
pairs is converted to roller bearings. Result: 1) steadier shop and labor schedule that brings minimum installation costs; 2) conversion cost is spread over a period of years.

Why put up with unsatisfactory friction bearings and costly "crutches"? Cut operating and maintenance costs to the bone and *cure* the hot box problem the *only* sure way—with Timken tapered roller bearings. Seven out of ten roller bearing freight cars are equipped with Timken bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".



7 out of 10 roller bearing freight cars roll
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Such long-time service is typical of Armco One-Wear Wrought Steel Wheels. They can't be beat for miles of service per dollar. What's more, because they need no maintenance, freight delays are reduced. Shippers stay happy; profits grow faster.

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They don't push this brace around

It's small, this Model 811 Rail Brace. But it has a stubborn streak that more than offsets the crushing pressures it must resist. No jarring wheels, no straining switches are ever going to push this brace around!

A brief look at the 811's design reveals the reason why. Notice that the bracing part itself is welded to the base plate on which the rail rests. Between the web of the rail and the leading edge of the brace a wedge-shaped forging is driven tightly into place. A steel spring in the wedge provides friction which alone could hold the wedge in place.

Just to make things foolproof two pawls on the brace are turned down into slots in the wedge, effectively locking the wedge in position. Thus the 811 Rail Brace becomes all but integral with the

running rail, and the rail just has to stay put. No thrust, no sharp impact can shake things up to cause unwanted play.

All over the country this resolute little brace is keeping rails in place—in crossovers, high-speed turnouts, high-degree curved track. There may very well be certain spots on your system which the 811 can brace up. A Bethlehem engineer will be glad to explain the 811 Rail Brace and the way it operates in full detail. You can get in touch with him by a letter or phone call to the nearest Bethlehem office.

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Workbook of the Railways

Vol. 140, No. 26
June, 25, 1956

CONTENTS and Week at a Glance

All-welded aluminum bodies . . .

. . . on 35 Magor-built gondola cars enable the units to haul payloads 20% greater than those of conventional cars of the same nominal capacity. The cars, constructed to haul bauxite for a Kaiser Aluminum subsidiary, also feature an unusual brake system. . . . p.7

FORUM: Finding \$20 billion . . .

. . . to take care of the railroads' capital requirements in the next 10 years is no boy's job, but Western Maryland President Grotz thinks it can be done. His unconventional ideas about railroad debt dovetail into a program for realistic tax policies. . . . p.55

"Molygrease" has many friends . . .

. . . among railroad men who are using it, but there are others who question its value. The arguments pro and con, and an explanation of the applications of this new product, are detailed in this issue. . . . p.56

Roadway is reshaped fast . . .

. . . on the Southern, using an earth-moving machinery "team" of seven major equipment units. . . . p.59

Better supervisors get promoted . . .

. . . series ends with Article No. 5, herein. It deals with such important managerial functions as delegating work and developing subordinates. . . . p.60

"Changed emphasis" . . .

. . . characterizes railroad public relations activities these days, and that means broader "staff" responsibilities for PR officers—not the least important of which is securing in employees at all levels a real appreciation of today's concept of public relations. . . . p.68

BRIEFS

Intercity truck tonnage . . .

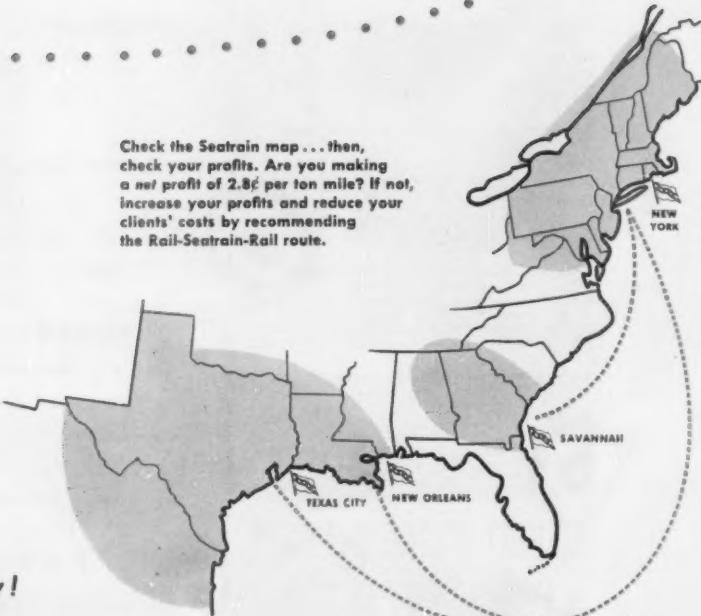
. . . was down 5.2% in April from that hauled in March and was up less than 1% over the volume for April 1955. A sur-

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on **MORE
PROFITS!**

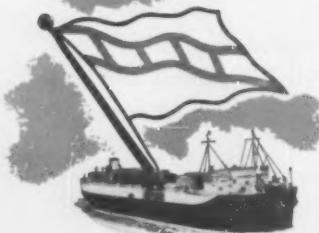
Railroads average
2.8¢ net profit per ton mile

Alert railroadmen are putting their finger on *extra profits* by recommending Rail-Seatrail-Rail routings. Average *net* profits to the railroads of 2.8¢ per ton mile on traffic between East and Southwest is more than double the average gross profit on cars routed via rail only!* Write, wire or call your nearest Seatrail representative today!

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*Specific examples on request.
Cost figure on I.C.C. basis,
revenue figures actual.

Current Statistics

Operating revenues, four months	
1956	\$3,413,453,838
1955	3,104,423,778
Operating expenses, four months	
1956	\$2,652,535,732
1955	2,371,029,566
Taxes, four months	
1956	\$361,835,961
1955	328,525,317
Net railway operating income, four months	
1956	\$313,059,632
1955	322,371,153
Net income, estimated, four months	
1956	\$236,000,000
1955	241,000,000
Average price 20 railroad stocks	
June 19, 1956	101.91
June 21, 1955	98.46
Carloadings revenue freight	
Twenty-three weeks, 1956 ..	16,571,228
Twenty-three weeks, 1955 ..	15,609,869
Average daily freight car surplus	
Wk. ended June 16, 1956 ..	8,958
Wk. ended June 18, 1955 ..	7,531
Average daily freight car shortage	
Wk. ended June 16, 1956 ..	6,577
Wk. ended June 18, 1955 ..	10,856
Freight cars on order	
June 1, 1956	133,072
June 1, 1955	16,886
Freight cars delivered	
Five months, 1956	27,639
Five months, 1955	14,096
Average number of railroad employees	
Mid-May 1956	1,061,972
Mid-May 1955	1,052,939

RAILWAY AGE IS A MEMBER OF ASSOCIATED BUSINESS PUBLICATIONS (A.B.P.) AND AUDIT BUREAU OF CIRCULATION (A. B. C.) AND IS INDEXED BY THE INDUSTRIAL ARTS INDEX, THE ENGINEERING INDEX SERVICE AND THE PUBLIC AFFAIRS INFORMATION SERVICE. RAILWAY AGE, ESTABLISHED IN 1856, INCORPORATES THE RAILWAY REVIEW, THE RAILROAD GAZETTE, AND THE RAILWAY AGE GAZETTE. NAME REGISTERED IN U. S. PATENT OFFICE AND TRADE MARK OFFICE IN CANADA.

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Week at a Glance CONTINUED

vey of 352 Class I intercity motor common carriers showed 4.4 million tons of general freight hauled in April 1956, compared to 4.7 million in March and 4.39 million in April 1955. Four-month volume for 1956 was 6.1% over the same period last year.

Capital expenditures were up 71.5% . . .

. . . in this year's first quarter as compared with the like 1955 period. The 1956 quarter's total was \$298 million, including \$224 million for equipment and \$74 million for road, increases, respectively, of 87.9% and 35.3% above 1955's first quarter. It looks now as though this year's 12-months total will be about \$1.3 billion, up 45% from 1955's \$908 million.

Diner dollars cost \$1.40 each . . .

. . . in 1955. That year's ratio of dining and buffet revenues to expenses of the services was 140.3. And the expense side includes only direct costs, nothing for transporting dining cars or general overhead. The 1955 showing was a little better than that of 1954, when the ratio was 143.9—the equivalent of \$1.44 for each dollar of revenue.

No more "third class" travel . . .

. . . on British Railways; they acted recently to conform with railroads in western Europe which now offer only first and second class accommodations.

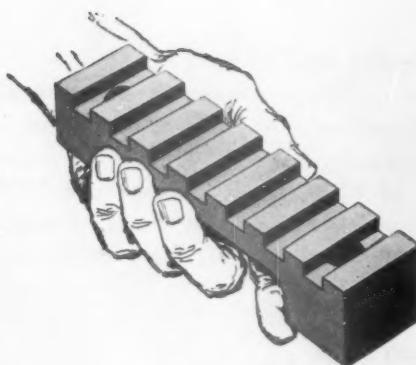
Another pay hike . . .

. . . this time for 25 cents an hour, to restore their "wage relationship" with workers in other industries, is being sought by 11 non-op unions who filed demands on the railroads June 20. An increase of 14½ cents an hour granted last December was inadequate, labor spokesmen claim, asking new raise to be made effective August 1.

It's not always the case . . .

. . . but "in certain instances" alliances with the railroads work "to our mutual benefit," BLE Chieftain Guy Brown says. A traditional wall of non-cooperation has been breached on such issues as the railroads' fights against trucks hauling explosives, in support of the Cabinet Report and in opposition to the Post Office three-cent-mail-by-air experiments, he informed BLE convention delegates.

Improve the efficiency of any journal lubricator with Magnus R-S JOURNAL STOPS



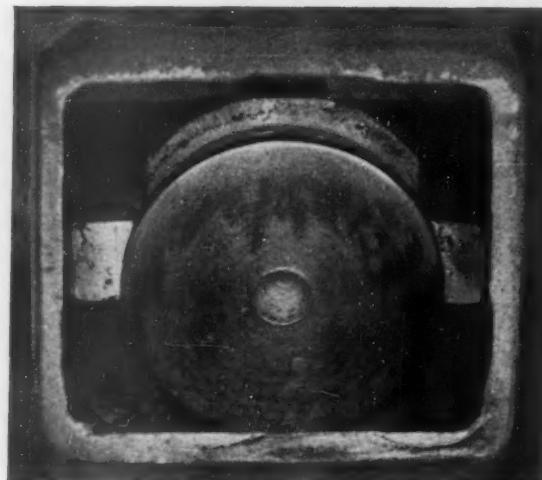
Longer bearing life and lower maintenance costs for trucks and journal boxes also yield big return on initial R-S Journal Stop investment

WITH conventional waste packing and Magnus R-S Journal Stops, you can run freight cars for three years between periodic servicing. That's been established by test experience to date.

Bolted to both sides of the journal box, the bronze bearing-metal Journal Stops form a permanent, built-in waste "container" that holds the mass of packing right where it belongs, even under severe braking and impact forces. And, unlike any other waste container or retainer, by keeping the bearing on the journal, you prevent short strands from being trapped beneath the bearing crown. By restricting fore-and-aft movement of the journal within the box, they prevent squashed-down waste packs, maintain constant journal-to-packing pressures, assure a uniform feed of oil to the bearing and eliminate danger of waste grabs.

But that's not all. You also get longer bearing life and freedom from spread linings. You reduce the requirements for an effective box rear seal and increase the efficiency and service life of present dust guards and seals. That's vital to the successful operation of most waste substitutes.

Pad and mechanical lubricators benefit too. By keeping



Here's proof of Journal Stops' unique ability to hold packing in place even under extreme service conditions. This unretouched photograph shows the interior of a Journal-Stop-equipped box after undergoing an 11½ mph flat-switching impact test. Waste is still firmly seated under the journal.

the journal in its proper position, you keep the box from rising during impacts and braking — don't crush the lubricator or seal. Axle dust guard seats can't be scored either.

WHAT ABOUT COST? One private car line estimates it has recovered more than 90% of the total cost of Stops and installation in just the first 20 months of operation. Other roads report comparable savings. R-S Journal Stops not only pay for themselves in reduced maintenance costs. They get cars to destination with trouble-free journal boxes. Write for complete information. Magnus Metal Corporation, 111 Broadway, New York 6 or 80 E. Jackson Blvd., Chicago 4.

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Solid Bearings

MAGNUS METAL CORPORATION

Subsidiary of NATIONAL LEAD COMPANY



WELDED ALUMINUM BODIES MEAN . . .

Cars Carry Greater Payloads

Magor-built gondolas for Kaiser subsidiary feature unusual air brake system to compensate for difference between empty and loaded weight

A lading increase of 20% has been achieved through use of all-welded aluminum bodies, and some innovations in design, on 35 gondola cars built by the Magor Car Corporation for the Kaiser Bauxite Company, wholly owned subsidiary of the Kaiser Aluminum & Chemical Corp.

The cars—which will haul bauxite over Kaiser Bauxite's 13-mile railroad on Jamaica in the British West Indies—can carry six 14-ton truckloads of the commodity, compared with five truckloads on steel cars with trucks of the same capacity. The increased capacity has been made possible by reducing, through use of aluminum, the light weight of each car to 36,700 lb, some 25,000 lb less than that of conventional gondola cars of the same nominal capacity.

U.S. standards are adhered to throughout the cars, except for a novel airbrake system made necessary by the low weight of the car.

Instead of the air brake system operating at full pressure at all times, a valve in the locomotive re-

duces the train line pressure when empties are being hauled. Thus, the wide difference between empty and loaded weights will not lead to wheel slide when cars are empty, or to underbraking when they are loaded.

The two pressures used are 90 psi—which gives a loaded braking ratio of 70%—and 50 psi, which gives a 25% ratio on empty cars. Empty steel cars in the consist have a 22% ratio with the 50-psi setting. If it is necessary to move an empty aluminum car in a loaded train with the 90-psi setting, the brakes are cut out by a valve on the car.

The all-aluminum body is attached to a standard AAR steel underframe with hot driven rivets which pass through the side sill angle, floor plate and diaphragm. Contact areas,

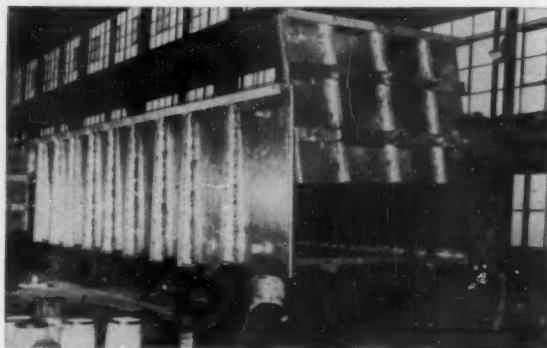
where steel and aluminum meet structurally, are insulated by zinc chromate paint on the aluminum, and a coat of red lead on the steel. The entire underframe is also sprayed with car cement.

Because the cars are unloaded in rotary dumpers, the sides are designed to withstand the weight of the entire lading while dumping. Two $\frac{3}{8}$ -in. aluminum plates are butt-welded together to form a continuous side. Each side is reinforced by a top side rail and exterior-mounted side posts on 3-ft centers. Gussets welded to the bottom of each post stiffen the section at floor level. The side sheets themselves are sloped outward at a 2-deg angle to facilitate gravity dumping.

The car body is strengthened by a 6 by 4 in. extruded aluminum side and end sill angle welded to the side, end and floor. The end of the car has three extruded channel-shaped vertical posts welded to the outside of the end sheet, and two horizontal aluminum straps welded to the end posts and corners, also on the outside.

Dimensions and Capacities of Kaiser's Aluminum Cars

Length, coupled, ft-in.	40-9
Length, inside, ft-in.	36-5
Width, inside, ft-in.	9-6½
Height, inside, ft-in.	6-6
Capacity, level, cu ft	2,233
Capacity, heaped, cu ft	2,630
Capacity, lb	173,300
Weight, empty, lb	36,700



END SECTION of Magor-built aluminum gondola car being lowered into position (left), will later be riveted to the end seal angle with hot driven rivets, and inert-gas-welded at the corners. Four large 7/16-in. aluminum plates are



butt-welded together to form the car floor, which is later riveted to the steel underframe. Drain holes $\frac{3}{4}$ in. in diameter in the floor plates prevent retention of moisture within the gondolas.

Cabinet Committee Report Hearings End

Sessions concluded with new presentation by Secretary of Commerce Weeks—AAR opposes through-routes proposals

The House Committee on Interstate and Foreign Commerce concluded on June 20 its public hearings on pending bills to implement recommendations of President Eisenhower's Cabinet Committee on Transport Policy and Organization. The hearings, which extended over a period of nearly two months, having got under way April 24, were conducted by a subcommittee headed by Representative Harris, Democrat of Arkansas.

The concluding session was devoted to a further presentation by Secretary of Commerce Weeks, who was chairman of the Cabinet Committee. The record was then left open for 10 days to permit interested parties to file statements. The Interstate Commerce Commission was expected to file something which would be a supplementary presentation, since it had already appeared at a hearing session (Railway Age, May 7, p. 8).

Through Routes—Meanwhile, the Association of American Railroads has already filed a supplemental statement to register its opposition to through-routes provisions of the pending bills. That put the AAR in opposition to the American Short Line Railroad Association, whose

president, J. M. Hood, appraised the through-routes provisions as being of "paramount importance" to members of that association (Railway Age, May 28, p. 11).

The provisions in issue would prohibit a carrier from cancelling a through route without the consent of all participating carriers, unless the commission, after hearing, authorized the cancellation. While Mr. Hood supported the "objective" of this provision, he suggested a substitute. The AAR statement opposed both proposals, because they would remove "all the presently effective limitations on the commission's power to prescribe through routes, limitations that have a long history of careful consideration on the part of Congress."

Secretary Weeks' statement gave the subcommittee the benefit of his thinking as influenced by presentations made by other interests. He noted that "the great majority of those who have testified" agreed with the Cabinet Committee's view that "some change in transport regulatory policy is necessary."

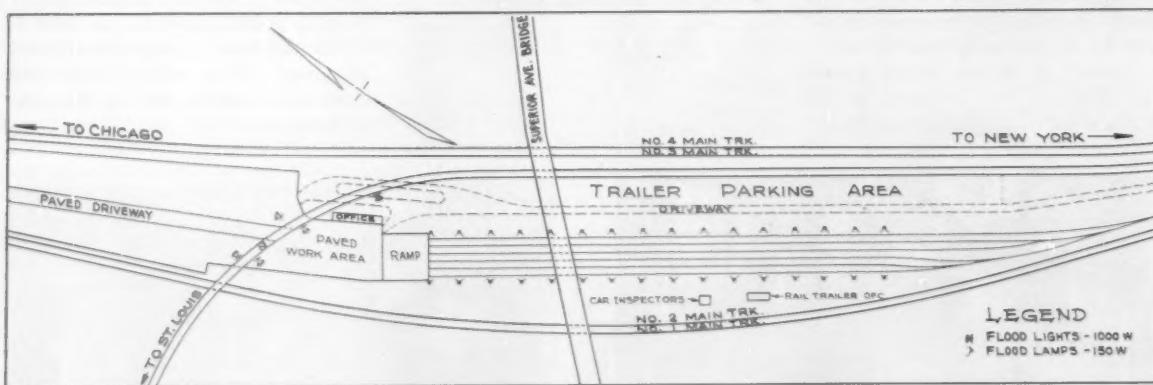
Meanwhile, however, the secretary reported that his views had changed with respect to some of the matters

involved. He followed through to suggest amendments to the pending bills, which are H.R.6141 and H.R.6142.

Intra-Agency Competition—The first of the proposed amendments would extend the rate-freedom program to competition between carriers operating in the same mode of transportation as well as between carriers of different modes. Railroad presentations to the committee had suggested that the rate-freedom program might well be confined to inter-agency competition.

Reflecting further disagreement with the railroad industry's position was Secretary Weeks' insistence that the rate-freedom program required rewriting of the Interstate Commerce Act's declaration of national transportation policy as well as addition to the rate-making rule of the "three shall nots," which would prevent the ICC from considering the effect of a proposed rate on a competing carrier.

"If we adopt the proposition that competition within reasonable bounds may be relied upon to effect greater utilization of transportation resources," Mr. Weeks said, "it would be inconsistent to retain language in the policy stating that competition shall not be destructive, or (Continued on page 10)



PRR Will Spend \$135,000 to Expand Pittsburgh TrucTrain Facilities

Two tracks will be added to the present four-track terminal for loading and unloading highway trailers on flatcars at the Pennsylvania's Island Avenue yard in Pittsburgh. Layout of the terminal as it will appear when program is completed, is shown above. The \$135,000 program—which will increase the road's TrucTrain servicing facilities in the city by 50%—includes an improved and expanded floodlighting system for night operations, paving of drive-

ways and loading areas, and enlarging the existing office building. "This program reflects not only the steady growth of our TrucTrain volume in western Pennsylvania," says Vice-President Morton S. Smith, "but our confidence that this growth is going to continue and establish this type of transportation as a permanent and important segment of the Pennsylvania's freight service." Eighty trailers a day on the average are now handled at the terminal.

RAILWAY MARKET OUTLOOK THIS WEEK

a RAILWAY AGE Workbook Page

Carloadings Up.—Loadings of revenue freight in the week ended June 16 totaled 801,431 cars, the Association of American Railroads announced on June 21. This was an increase of 14,356 cars, or 1.8%, compared with the previous week; an increase of 21,474 cars, or 2.8%, compared with the corresponding week last year; and an increase of 94,194 cars, or 13.3%, compared with the equivalent 1954 week.

Loadings of revenue freight for the week ended June 9 totaled 787,075 cars; the summary, compiled by the Car Service Division, AAR, follows:

REVENUE FREIGHT CAR LOADINGS For the week ended Saturday, June 9			
District	1956	1955	1954
Eastern	123,177	125,895	111,023
Allied	152,075	151,463	127,251
Pocahontas	67,130	60,931	50,954
Southern	128,505	123,074	116,221
Northwestern	126,043	130,192	116,867
Central Western	128,065	129,722	117,276
Southwestern	62,080	60,661	57,991
Total Western Districts	316,188	320,575	292,124
Total All Roads	787,075	781,938	697,583
Commodities:			
Grain and grain products	56,685	52,040	53,909
Livestock	6,278	6,347	5,933
Cool	131,641	132,097	110,813
Coke	13,258	11,669	7,333
Forest Products	48,743	46,310	43,080
Ore	88,244	83,900	71,484
Merchandise (c.)	59,622	67,323	60,374
Miscellaneous	382,603	382,252	344,657
June 9	787,075	781,938	697,583
June 2	719,209	709,351	612,314
May 26	788,297	785,589	689,292
May 19	778,997	759,879	681,967
May 12	777,606	752,645	677,540
Cumulative total, 23 weeks.	16,571,228	15,609,869	14,462,870

In Canada.—Carloadings for the ten-day period ended May 31 totaled 145,008 cars, compared with 77,562 cars for the previous seven-day period, according to the Dominion Bureau of Statistics.

	Revenue Cars	Total Cars Rec'd from Loaded Connections
Totals for Canada:		
May 31, 1956	145,008	51,242
May 31, 1955	109,686	45,637
Cumulative Totals:		
May 31, 1956	1,703,563	749,308
May 31, 1955	1,516,739	674,286

New Equipment

FREIGHT-TRAIN CARS

► **Fruit Growers Express.**—Earlier order for 1,000 refrigerator cars to have been built in Alexandria, Va., shops has been reduced to 900 units (800 40-ft 50-ton cars and 100 50-ft 70-ton mechanically refrigerated cars); Pacific Car & Foundry will build 400 of the 40-ton cars, the 500 other cars will be built at Alexandria; delivery expected during first quarter of 1957.

► **North American Car Corp.**—Ordered 125 70-ton covered hopper cars, Pullman-Standard; approximate unit cost \$8,200; delivery scheduled March 1957.

► **May Deliveries Highest Since October '53.**—New freight cars delivered in May totaled 6,667, highest since October 1953, when 8,727 cars were delivered, ARCI and AAR report; May also was first month since November 1953 that cars delivered totaled over 6,000; 5,943 cars were delivered in April, and in May last year 4,083 cars were delivered; orders for new cars in May declined to 2,403, compared with 6,559 in April and 3,041 in May 1955; June 1 backlog was 133,072, compared with 137,436 on May 1 and 16,886 on June 1, 1956.

Type	Ordered May '56	Delivered May '56	On Order June 1, '56
Box—Plain	0	3,399	50,991
Box—Auto	0	0	2,100
Flat	288	140	5,645
Gondola	0	427	12,510
Hopper	300	1,704	39,710
Covered Hopper	145	368	5,572
Refrigerator	1,000	169	6,162
Stock	0	0	0
Tank	132	334	7,548
Caboose	11	23	209
Other	527	103	2,525
TOTAL	2,403	6,667	133,072
Car Builders	1,931	4,493	61,708
Company Shops	472	2,174	71,364

► **Repair Ratio Improves.**—There were 69,512 freight cars waiting repairs on Class I roads May 1, compared with 113,543 bad-order cars on May 1, 1955, netting a 2.5% reduction in repair ratio, AAR reports:

	May 1, 1954	May 1, 1955	Change
Ownership*	1,699,379	1,722,513	23,134 (d)
Waiting Repairs	69,512	113,543	44,031 (d)
Repair Ratio	4.1%	6.6%	2.5% (d)

*Excludes railroad-owned private refrigerator cars.

LOCOMOTIVES

► **Brazil and Chile Order 76 GE Units.**—Brazil's Santos A. Jundiai Ry. has ordered 45 63-in.-gauge 720-hp diesel-electric units costing \$5,000,000 from General Electric, with delivery to begin next fall; Chilean State Rys. placed \$4,000,000 order for 11 of GE's new universal, 900-hp, 38½-in.-gauge units (Railway Age, Apr. 16, p. 47), and 20 66-in.-gauge units, five of 1,600 hp and 15 of 720 hp; delivery of Brazilian order will begin in about seven months.

(Continued on following page)

RAILWAYS IN THE MARKET—THIS WEEK

CONTINUED

► *Ontario Northland.*—Ordered six 1,750-hp diesel-electric road switching units, General Motors Diesel; when units are delivered—scheduled for early 1957—ON will be 100% dieselize and all remaining steam locomotives will be sold or scrapped.

New Facilities

► *Arkansas & Louisiana Missouri.*—Program of crushed rock ballasting is underway, completion scheduled for late summer; cost, \$45,000.

► *Belt of Chicago.*—Has applied for ICC permission to construct 7,000-ft rail connection with Chicago's Lake Calumet Port District railway yards, which are under construction near 130th street and Doty avenue; permission for trackage rights over the Rock Island into the area has been refused; the extension, including two bridges, would cost about \$3 million.

► *Chicago & North Western.*—Plans immediate construction of new, all-weather, completely enclosed car building and repair shop, Clinton, Iowa; structure, 1,000 ft long and 160 ft wide, will be designed to build 1,000 freight cars and make heavy repairs to 7,000 cars annually; completion is scheduled for early 1957.

► *Denver & Rio Grande Western.*—Will standard gage its 19.83-mile narrow-gage Salida-Monarch branch beginning August 1, estimated cost \$431,000.

► *Missouri-Kansas-Texas.*—Is participating in development of 100-acre tract adjoining Sheppard Air Force Base and three miles from Wichita Falls, Texas; Katy's tracks cut through the district and road will extend lead tracks to serve industries that locate on site.

► *Missouri Pacific.*—Announced 38 construction projects to cost an estimated \$4,376,350, including, among the larger projects: flood protection work (raising and relocating tracks and incidental facilities) at Chester, Ill.; installation of 39 miles of CTC between Bald Knob, Ark., and Holland; construction of three-story office building at Palestine, Tex.; purchase of additional property for enlargement of freight yards at San Antonio, Tex.; and constructing passenger station tracks and install flashing light signals in connection with opening of streets across the railroad right-of-way at Harlingen, Tex.

► *Railway Express Agency.*—Plans construction of \$500,000 depot in conjunction with proposed joint use of Hoboken, N.J., rail terminal by Lackawanna and Erie; depot will accommodate 30 cars and will approximately double 29,000 sq ft area of existing building; track will be run through structure with three hydraulic bridges permitting track sections between platforms to be elevated to loading floor level to provide solid floor space and facilitate freight handling when tracks are unoccupied.

► *Southern Pacific.*—Will concrete line 720 ft of tunnel No. 6 on Coast Division between Los Angeles and San Francisco this year, estimated cost \$319,000; previous item in Railway Age, May 14, p. 10, gave erroneous impression that entire 3,610-ft tunnel was to be lined.

(Continued from page 8)

that inherent advantages shall be preserved. It is just such language which has been relied upon to protect carriers from price competition, and restrain carriers from quoting what the regulators have called "competitively unnecessary rates."

Ignoring Public Interest —

When the commission considers the effect of a proposed rate reduction on the traffic of another carrier, "it must necessarily ignore or set aside the public interest in the movement of traffic by the form of carrier best adapted to its movement," Mr. Weeks also said. As to the policy that rates should be "no lower than necessary to meet competition," he said it has the effect of "setting rates on the basis of the high cost mode of transportation."

The secretary also commented on the position of carriers which have failed to endorse the lifting of "paternalistic restraints." He hopes that position "is not a sign that some managements may not be ready or willing to assume the burden of increased managerial responsibility." At another point in his statement, Mr. Weeks had this to say:

"It is an anomalous transportation policy that gets support on the basis that it shields carriers from the public. To the contrary, the proposed amendment seeks to shield the public from carrier indifference. Unless carriers are truly responsive to public needs, and endeavor to fulfill those needs, technological and managerial efficiency, we can never attain the full use of the resources so expended."

Suspension—Another matter on which Mr. Weeks changed his view was the proposed change in the commission's power to suspend tariffs. The Cabinet Committee recommended that the maximum suspension period be shortened from seven months to three months, and that the carrier proposing a rate change be relieved of the burden of proof if the protestant be another carrier.

Objections raised to shifting the burden of proof "seem well taken," Mr. Weeks said—"if we assume that all frivolous and unjustifiable protests are screened out, as the bill intends." Otherwise, he adhered to his original position on the suspension matter, conceding, however, that provision might be made letting the commission extend the initial

suspension period if "unusual" circumstances warranted such action.

The secretary also defended Cabinet Committee recommendations on various other matters, such as its proposals to repeal the exemption from regulation now enjoyed by water carriers of commodities in bulk, to sharpen definitions of private and contract carriage, and to give the ICC power to override state commissions to permit abandonment of unprofitable intrastate services.

General Public Absent—Mr. Weeks reminded the subcommittee that most of those it heard were representatives of types of transportation, whose first concern was the industry they were championing. He added:

"But absent from your hearings has been another group. . . . The absentee is the general public. . . . The public interest must be paramount in all of our ultimate decisions."

Service Order Limits Free Time at Lake Ports

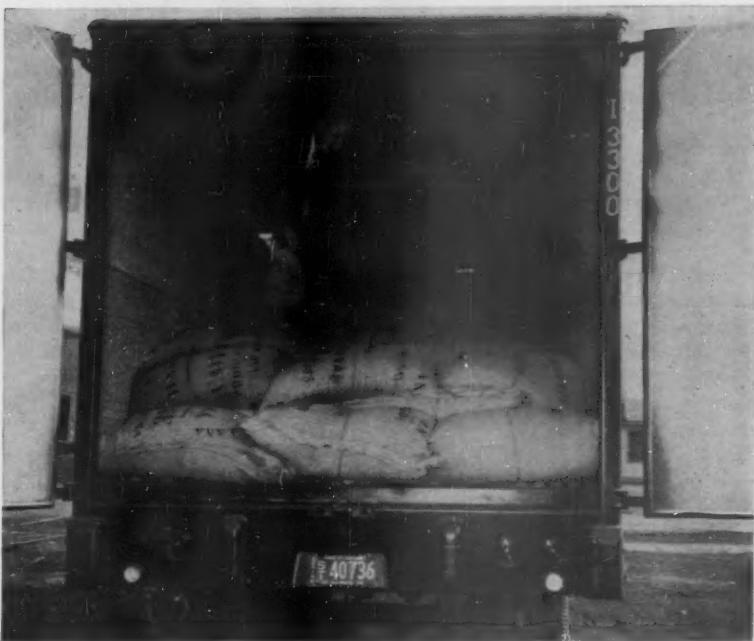
Service Order No. 914 has been issued by the Interstate Commerce Commission to prohibit railroads from granting more than two days free time on cars loaded with export freight and held for unloading at Great Lake ports. The order does not apply to cars loaded with coal, coke, bulk grain, flaxseed, or soybeans.

It became effective June 14, and is scheduled to expire December 31, unless otherwise modified. The order was based on the commission's determination that there is "a critical shortage of freight cars," and that free-time allowances published in present tariffs "aggravate the shortage."

New Mountain-Pacific Class Rates Delayed

August 1 is now the effective date of the class-rate changes prescribed by the Interstate Commerce Commission in the Mountain-Pacific phase of its uniform class-rate program. The changes were originally scheduled to become effective June 1.

Rates involved are the class scales applicable within Mountain-Pacific territory and inter-territorial class rates in both directions between that



Brazilian Coffee Reaches Chicago via Piggyback

Daniel F. Lyons, foreign freight agent of the Illinois Central at Chicago, examines the first piggyback shipment of coffee from New Orleans. The IC expanded its piggyback to include the

Chicago-New Orleans service on June 7. Shipments since that time have included lumber from Honduras, coffee from Brazil, Cuba and Honduras, and pineapple from Hawaii.

territory and other sections of the country. The cases are docketed as Nos. 30416 and 30660 (Railway Age, Jan. 9, p. 13). That phase of the uniform-rate program which involved the remainder of the coun-

try was disposed of in the 28300 case, a companion proceeding to the 28310 case which resulted in establishment of the uniform classification applicable throughout the country, including Mountain-Pacific territory.

"Piggyback" for Private Carriers

Authority to handle trailers of the shipper, when the shipper elects to furnish such equipment, was granted by the Interstate Commerce Commission, effective June 15, to the Lackawanna, the Nickel Plate, the Wabash, the Susquehanna and the Lackawanna & Wyoming Valley. The railroads pay the shipper for use of the trailers.

In supplement 11 to freight tariff 308-D (ICC 24565), for example, the Lackawanna, Susquehanna and L&WV state: "When the shipper furnishes a semi-trailer to accommodate his shipment, an allowance of \$3.25 per calendar day or fraction thereof will be paid to the shipper for the time his semi-trailer, loaded or empty, is in the possession of car-

riers. Semi-trailers may be returned loaded or empty at carrier's option, without charge for return of empty semi-trailer. . . ." The \$3.25 is the same as the per diem rate the roads pay for use of the other lines' trailers.

Shipments in or on trailers furnished by the shipper will move at the commodity or class rates provided by the railroads in their "all-rail" piggyback tariffs. Tariff 308-D applies interstate between points on the Lackawanna, Susquehanna and L&WV, and points in Illinois, Indiana, Kentucky, Michigan, Missouri, New Jersey, New York, Ohio and Pennsylvania. The tariff also applies to New York intrastate traffic.

Steel Strike Threatens Car Building

How the impending steel strike may affect railroad attempts to refurbish car fleets is indicated by disclosure that ACF Industries will have to close its car-building facilities if steel plants are shut down.

ACF President James F. Clark recently told the New York Society of Security Analysts that for every day its sources of steel are idled in a strike, ACF must also suspend operations for one day. Strike votes authorizing a steel-industry walkout have already been taken, and bargaining sessions had not appreciably lessened the likelihood of a strike as this issue of Railway Age went to press.

This was virtually the only gloomy note in Mr. Clark's general appraisal of the business outlook for both ACF and the railroads.

He said his firm's railroad business backlog in May came to some \$150 million, of which about 90% would be shipped this year. "I see new thinking and new approaches to old problems" in the railroad industry, he declared, predicting that the "peak and valley" nature of railroad buying will become a thing of

the past. Railroad leaders have informed him, Mr. Clark went on, that they plan to maintain consistent buying programs.

A unique financing plan may be introduced by ACF within six months, Mr. Clark added, as a means of stimulating steady railroad business. Details could not be disclosed when he spoke, but he said the plan will not require railroads to be "flush with money" when they place orders.

As to ACF activities in developing modern railroad equipment, Mr. Clark described the "Adapto" car—which he said had been visualized as a cargo handling device rather than a freight car—as the "ideal link" between railroads and truckers. "Talgo" lightweight trains, he said, should be considered as "progenitors" of subsequent passenger train innovations. Mr. Clark added that railroads have, as a whole, been carefully evaluating these innovations and have actually held up passenger car buying programs but are expected to resume such activities later in 1956.

Canadian Roads Get "First Aid"

Canadian railways have been granted an interim freight rate increase of 12 cents a ton on coal and coke, and 7% on other traffic. The increase, granted in the form of "first aid" by the Board of Transport Commissioners, will be effective from July 1 to October 31.

Hoping to offset the cost of wage increases amounting to about a 20-cent "package" (Railway Age, May 28, p. 11), the Canadian roads had asked for a permanent rate boost of 25 cents a ton on coal and coke, and 15% on other commodities.

Board action was tied by Chairman John Kearney to a recommendation of the Royal Commission on Transportation in 1951 that: "where railways make out a prima facie case of need for increases in tolls, the board should consider the desirability of granting interim relief at the earliest possible date pending final disposition of the application. . . ."

Final action on the increase sought will follow board consideration of opposition to the higher rates from provincial governments and other interests.

Liability Act Now Has Broad Scope

The 1939 amendment broadened coverage of the Federal Employers' Liability Act to the point where its benefits are no longer limited to railroad employees "who have cinders in their hair, soot on their faces, or callouses on their hands."

The United States Supreme Court has so ruled in a decision which extended the coverage to a clerk in the

Pennsylvania's general offices at Philadelphia, whose duties consisted of filing original tracings of the road's rolling stock and roadway structures. At the same time, the court ruled that various classes of Southern Pacific employees were also covered.

The 1939 amendment rewrote the liability act's original scope

clause to stipulate that it covered any railroad employee whose duties "shall be the furtherance of interstate or foreign commerce; or shall, in any way directly or closely and substantially, affect such commerce." Originally, the clause covered railroaders while employed in interstate commerce, and the 1939 amendment, as the Supreme Court's majority put it, "was designed to obliterate fine distinctions as to coverage."

That statement was in the decision in the PRR case which was docketed as No. 621, *Martha C. Reed v. Pennsylvania*. The decision was announced by Justice Minton, who also announced the SP decisions, embodied in one opinion in No. 257, *Southern Pacific v. Charles M. Gileo, et al.*

The PRR clerk was injured when a cracked window pane in her office blew in upon her. The case came to the Supreme Court on her appeal from lower-court rulings which held she was not covered by the liability act. The Supreme Court's decision included the following:

"The filing of tracings and the dispatch of blueprints taken from them comprise a direct link in the maintenance of respondent's lines and rolling stock. Together with the makers of blueprints, petitioner constitutes the means by which men throughout respondent's system obtain the information they must have to maintain the railroad's trains, equipment, track, and structures.

"The very purpose of petitioner's job is to further physical maintenance of an interstate railroad system. Proper performance of her duties makes an obvious contribution to the maintenance of that system. We hold that petitioner . . . is furthering the interstate transportation in which respondent is engaged."

A dissenting opinion came from Justice Frankfurter, with whom Justices Reed and Harlan agreed. Also, the dissent of Justice Burton was noted. Thus, the majority ruling was a 5-to-4 decision.

The SP cases presented the question of whether the 1939 amendment ended the "new construction" doctrine which held that the act did not cover railroad employees engaged in constructing new facilities. Three of the SP employees involved had been injured while at work building new

cars; a fourth was a wheel molder injured while working on wheels made for either new cars or cars previously in service; and a fifth was a laborer injured while at work during construction of a new retarder yard.

The Supreme Court's decision in this case was unanimous. The case came up on SP's appeal from the Supreme Court of California's ruling that the five employees were covered by the act.

MoPac T-O-F-C Variation Uses Gondola Cars

Using detachable-wheel trailer bodies built in its own shops, the Missouri Pacific has started a piggy-back service in which gondola cars or flat cars may be used interchangeably.

Available initially between St. Louis-East St. Louis and Kansas City, the service employs electrically operated gantry cranes which lift trailer bodies off their chassis and place them on any type flat-bottom rail car. Cranes have been erected at St. Louis and Kansas City and are to be erected soon at Houston, Tex., San Antonio, Fort Worth, Corpus Christi, Dallas, Abilene, Little Rock, Ark., Wichita, Kan., Monroe, La., New Orleans and Memphis, as service is extended to those points.

This type service, to be provided over both its own and Texas & Pacific lines, is in addition to MoPac participation in Trailer-Train piggy-back operations with the Pennsylvania and other roads.

Building of the first lot of 200 trailer bodies and 100 chassis for the service is being done at MoPac's Sedalia, Mo., mechanical facility. Elimination of the dead weight of trailer wheels and chassis is described by the road as one chief advantage of its technique, but it also claims benefits in quicker loading and reduction of shock and damage.

Extension of its piggyback services in Massachusetts and Connecticut has been announced by the New Haven. The additional points now reached lie in the area between Fairfield, Conn., and Branford, up the Naugatuck Valley to Waterbury, between Waterbury and Hartford, between New Haven and Hartford, and in southeastern Massachusetts, exclusive of Cape Cod and a few specified NH stations.



Swedish Railroads Celebrate 100th Anniversary

Swedish State Railways, largest business enterprise in Sweden, account for about 93% of the nation's total 10,300 miles of route. Now celebrating their centennial, the railways are about 40% electrified, although many

German-manufactured diesel locomotives have been put into service in recent years. Freight traffic accounts for 63% of State Railway revenues. Scene above is in northern Sweden. Note that traffic moves to left.

Faricy Defends Demurrage Hike

Proposed increases in demurrage rates, on which car-owning railroads are now being polled, would not affect the shipper who does not delay cars beyond the free time allowed for loading and unloading.

So wrote William T. Faricy, president of the Association of American Railroads, in answer to a letter from Senator Magnuson, Democrat of Washington, chairman of the Senate Committee on Interstate and Foreign Commerce. Senator Magnuson had asked that railroads "weigh the matter carefully before proposing higher demurrage charges."

The higher rates and proposed changes in rules (Railway Age, June 4, p. 14) are designed to increase availability of freight cars and to recognize increased costs of ownership, Mr. Faricy said. As to car availability, he said that, while many shippers are cooperating in cutting down detention, in May it averaged 20.4% beyond the free time, the poorest May showing for at least the past 10 years. Detention at the peak of last year's car shortage "totaled more than the entire reported shortage," Mr. Faricy added.

The proposals now being voted

upon, Mr. Faricy also said, have been the subject of "extensive public hearings at which all interested shippers were invited to present their views, and hundreds did so. As a result, the original proposals were substantially modified out of deference to the very sincere and constructive views of segments of the shipping public."

IC Employees Learn to Improve Telephone Manners

A training program to improve telephone usage by its employees is being conducted by the Illinois Central. Recently, the first group of key personnel, chosen as instruction and discussion leaders, received a one-day indoctrination course at Chicago, with instruction being provided by representatives of the Illinois Bell Telephone Company.

After completion of the training program, the instruction leaders will return to their respective territories and train additional instructors. Classes will be set up to carry the program to all IC employees who deal with the public by means of telephone.

LATER DEADLINE FOR OLDEST ISSUES OF RAILWAY AGE

In response to reader requests, Railway Age has extended—from July 1 to August 1—the deadline for entries in its award contest for oldest copies of Railway Age, or a predecessor publication.

As detailed in the issue of June 4, page 14, Railway Age—which will be 100 years old next November 15—will award \$100 to the person or firm which submits proof of ownership of the oldest copy. Holder of the second oldest copy will get \$50.

We repeat: Please do not send issues to us. Merely submit statement of proof, or a photostat or photograph of front cover or masthead page, to Editor, Railway Age, 30 Church St., New York 7.

Railway Age's "lines of ancestry" bore the names Railroad Gazette, Railway Age, and Railway Review. Announcement of the holder of the oldest issue, and runners-up, will be made in Railway Age's Centennial Issue.

Supply Trade

Rhea P. Lapsley, sales manager of the Wilkes-Barre division of Okonite Company, has been appointed vice-president in charge of research and product development.

American Chemical Paint Company has opened an office and factory in St. Joseph, Mo., to serve a new central territory.

H. D. McLeese has been elected a vice-president of Metal & Thermit Corporation. He will continue as the company's chief sales executive.

R. M. Beswick, southeastern manager, Air Brake Division, Westinghouse Air Brake Company, at Washington, D. C., has been appointed general sales manager at Wilmerding, Pa. He has been succeeded by G. E. Carothers, assistant manager at



MAXWELL D. MILLARD has been appointed general manager of sales, American Steel & Wire Division, United States Steel Corporation, at Cleveland. He was formerly director of distribution and availability in the commercial department of U. S. Steel, at Pittsburgh.



R. M. Beswick

Washington, and Donald F. Scherer, service engineer, southeastern district, has been appointed representative there. **Kenneth Chrissinger**, representative at New York, has been named assistant eastern manager at New York.

Radio Corporation of America has named **John L. Salladin** field sales representative for microwave

radio equipment in the eastern region, succeeding **E. J. Hart**, who has been advanced to manager, RCA microwave equipment sales.

Wire Railway Appliance Company, Division of Unitcast Corporation, has appointed **N. E. Weifffenbach** vice-president—sales.

Richard T. Coyne has been appointed district sales manager, American Steel Foundries, at Denver, succeeding the late **F. H. Bassett** (Railway Age, June 11, p. 48). Mr. Coyne was formerly assistant to the president, National Motor Bearing Company, in charge of marketing its sealed journal box kit.

Youngstown Sheet & Tube Co. has appointed **R. P. Broadhurst** sales manager of the Chicago district and **C. Hix Jones** sales manager of the Dallas district, the latter succeeding **Frank D. Carroll**, retired.

Air Reduction Company has moved its executive offices from 60 East 42nd street, New York, to 150 East 42nd street.

Financial

Chesapeake & Ohio. — *Acquisition.*—This road has applied for ICC authority to acquire control of the Washington & Old Dominion. The acquisition plan assigns a value of \$450,000 to W&OD properties and contemplates exchange of 6,870 shares of C&O common for the 350 shares of W&OD outstanding. The application also indicated that there would be no merger of the properties—the W&OD would continue to be operated separately.

New York, New Haven & Hartford. — *Flood Loan.*—New Haven stockholders will be asked at a special meeting July 25 to authorize a supplementary loan to cover losses sustained in the 1955 floods. Authorization will be asked for sale to a group of banks of a promissory note not to exceed \$6,000,000, of which \$4,500,000 would be used to repay an interim loan authorized by stockholders at the April annual meeting. The new flood loan, like the first (Railway Age, Apr. 9, p. 20), will have the participation of the federal government.

Dividends Declared

ALLEGHENY & WESTERN.—\$3, semiannual, payable July 1 to holders of record June 20.

BEECH CREEK.—50¢, quarterly, payable July 1 to holders of record June 15.

CANADIAN PACIFIC.—ordinary, 75¢ (payable in Canadian funds), semiannual; 4% non-cumulative preferred (payable in sterling), 2%, semiannual; both payable August 1 to holders of record June 22.

CLEARFIELD & MAHONING.—\$1.50, semiannual, payable July 1 to holders of record June 20; \$1.50, semiannual, payable January 1, 1957, to holders of record December 20.

DAYTON & MICHIGAN.—preferred, \$1 quarterly, payable July 1 to holders of record June 15.

MISSOURI-KANSAS-TEXAS.—7% preferred, 50¢, accumulative, payable July 2 to holders of record June 18.

NASHVILLE & DECATUR.—7½% guaranteed, 93½¢, semiannual, payable July 2 to holders of record June 20.

NEW YORK & HARLEM.—common, \$2.50, semiannual; 10% preferred, \$2.50, semiannual; both payable July 1 to holders of record June 15.

NORTHERN CENTRAL.—\$2, semiannual, payable July 16 to holders of record June 29.

NORFOLK SOUTHERN.—30¢, quarterly, paid June 15 to holders of record June 1 (incorrectly reported in Railway Age, May 21, as semiannual payment).

NORWICH & WORCESTER.—8% preferred, \$2, quarterly, payable July 2 to holders of record June 15.

PIEDMONT & NORTHERN.—\$1.25, quarterly, payable July 20 to holders of record July 5.

RICHMOND, FREDERICKSBURG & POTOMAC.—\$1, quarterly; common, 50¢, extra; 7% guaranteed, 25¢, extra; all payable July 2 to holders of record June 20.

SOUTHERN.—\$1, paid June 15 to holders of record May 15.

STONY BROOK.—\$2, semiannual, payable July 5 to holders of record June 30.

TEXAS & PACIFIC.—common, \$1.25, quarterly; 5% preferred, \$1.25, quarterly; both payable June 29 to holders of record June 25.

WESTERN MARYLAND.—7½% 1st preferred, \$1.75, quarterly; 4½ 2nd preferred, \$1, quarterly; both payable June 29 to holders of record June 19.

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Two new and unique,
non-flammable fabrics.

NON-FLAMMABLE DIAPHRAGMS

1

**MORTON TYPE "DL"
NON-FLAMMABLE
FABRIC**

Road tested performance is proving the superiority of the fabric! Woven of Dynel yarns into Morton's 50-50 weave and impregnated with neoprene for waterproofing, it is proving to be resistant to strong detergents and other deteriorating elements. Its resistance to mildew and fungus is excellent.

Completely non-inflammable — will not support combustion . . . a quality inherent in Dynel and Neoprene — not achieved by chemical additives that will gradually leach out.

2

**MORTON TYPE "NE"
NON-FLAMMABLE
FABRIC**

The latest development in diaphragm fabrics!

**LIGHT—STRONG—
DURABLE**

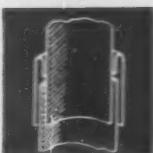
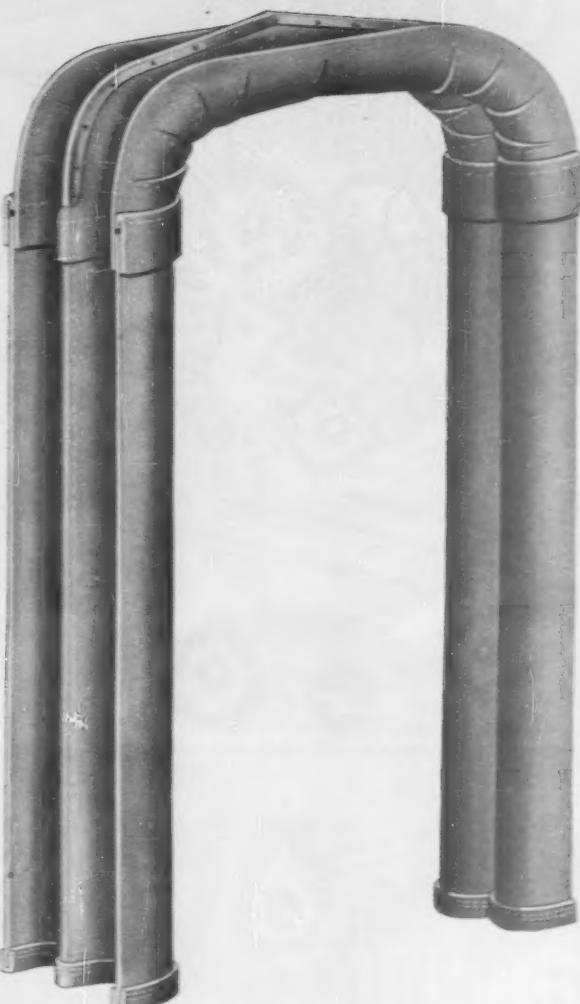
Originally developed and introduced on modern lightweight equipment . . . now also being offered in our standard vestibule diaphragms.

This fabric has a manufacturer's guarantee of 5 years' normal service; much longer service can be expected. The most important 1/16 inch in the railroad specialties industry—a single ply core of Dacron, built up to a 1/16 inch thickness with a special compound of neoprene . . . a smooth plate finish on both sides, which will not collect dust and dirt.

Mildew and rot become a thing of the past. This remarkable fabric is not affected by detergents and other deteriorating elements.

Non-flammable — will not support combustion.

Available in an attractive gray color.
Samples furnished upon request.



Exclusive sectional construction with a 5" deep pocket assures completely weather tight fit.



Center stiffener on a two or more fold diaphragm is a channel which guarantees a tighter and more effective joining of the folds.



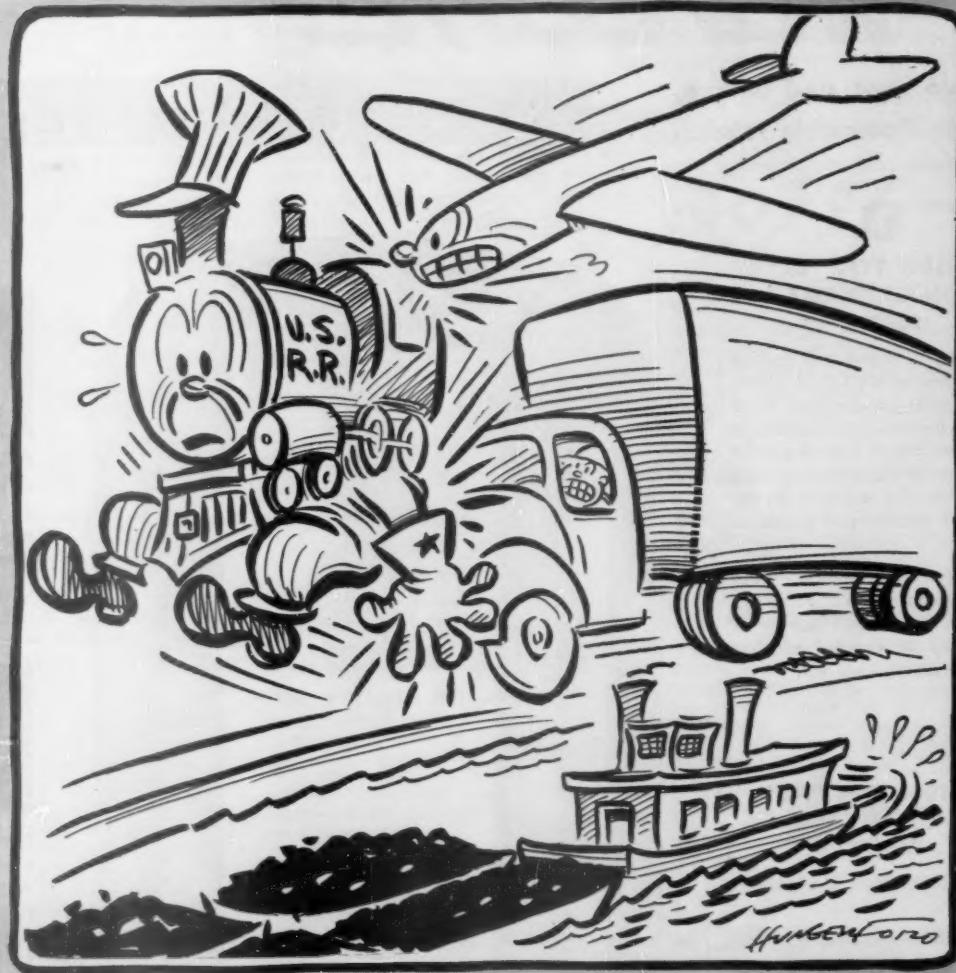
Separate top and legs effect real savings on replacements.

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who called the railroads a "monopoly"??

by Hungerford



We will be glad to send you enlarged copies of this Hungerford cartoon (without advertising copy) for posting on your office and shop bulletin boards, or a cut for your company magazine, at cost.

Edgewater

Rolled Steel Wheels



Freight Cars

Passenger Cars

Diesel Locomotives



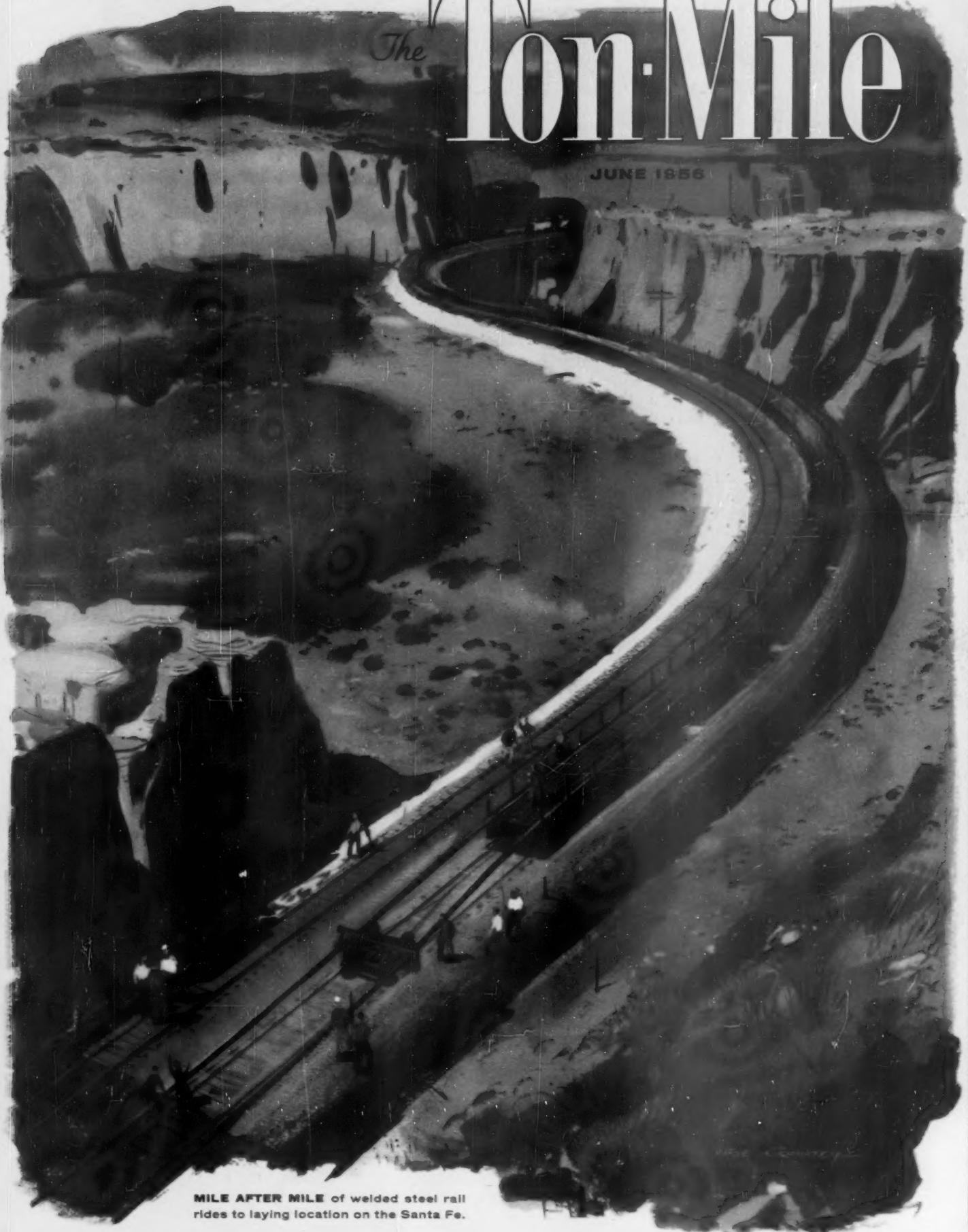
Edgewater Steel Company

PITTSBURGH 30, PA.

DEDICATED TO BETTER RAILROADING

The Ton-Mile

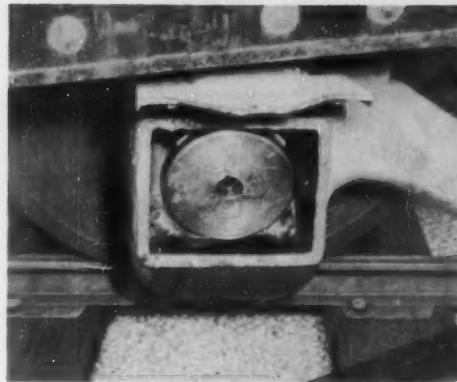
JUNE 1956



MILE AFTER MILE of welded steel rail rides to laying location on the Santa Fe.

simple The "Redipak" lubricating pad is a square block of foam neoprene, molded with cored passages and covered with cotton wicking material. It is installed—without any other packing—in the standard journal box without jacking the box.

foolproof The square "Redipak" lubricating pad is fully symmetrical—it can be installed any side out, either face up. It can be inserted by hand or with a "Redipaker"—a simple bent rod which speeds up the work—and is removed with a standard packing hook.



Stop Hot Boxes!

*"Redipak" Lubricating Pad points
the way towards elimination of the hot box problem*

cool-running The "Redipak" lubricated bearing has operated as much as 50°F. cooler than waste-lubricated bearings, under certain conditions. In laboratory starvation tests, with no free oil in the box, the "Redipak" retained enough oil for 10,000 miles of high speed operation.

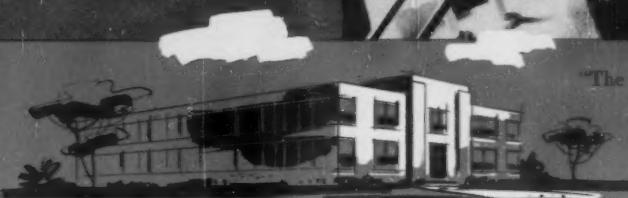
long-lasting In service tests, "Redipak" lubricating pads have operated over 90,000 miles each, without noticeable wear. No pad has shown any sign of glazing. Inspection of the bearings shows that the pads do not lint.

No waste...with "Redipak"!



NATIONAL BEARING DIVISION
ST. LOUIS 10, MISSOURI

The CEASELESS SEARCH *for Better Brake Shoes*



"The fastest train on earth"—a special dynamometer which can test wheels and brake shoes at speeds up to 160 m.p.h.—forms the heart of our Sargent Laboratory for railroad research. Here's the inside story of this lab's facilities . . . its operation . . . its ceaseless search for better brake shoes.

What can be done to produce a better brake shoe?

For over fifty years American Brake Shoe research has probed this question. Every factor affecting wheel and brake shoe friction, wear, and stopping ability has been subjected to year-in, year-out analysis. Out of this continuing study of brake shoe performance have come impressive improvements. Item: steel-mesh construction which lengthened brake shoe life. Item: many improvements in steel back design which increased safety and further extended life. Item: carbon inserts which improved frictional characteristics and reduced wear at high speed.

And still the search for better brake shoes continues. Today our Sargent railway engineering laboratory is devoting the greater part of its resources to development of a brake shoe made from composition materials. These materials generally consist of powdered metals, mineral fillers and organic binders—as in automobile brake linings.

Why are we working on this type of shoe? How are we going about it? Here are the answers.

Why Composition Shoes?

The big advantage that composition shoes offer over conventional iron shoes is *longer life*. Other points in favor of compositions are higher friction, which makes possible lighter braking systems; friction characteristics which promote smoother stopping; quiet operation; and light weight.

The advantages of longer-lasting brake shoes are obvious. Longer shoe life implies lower shoe cost per car-mile; and it certainly means less labor expense, fewer replacements and generally lower car maintenance.

Higher friction can be utilized by designers of new cars to reduce car weight. With the same braking being produced by one-half to one-third the usual pressures, the size of many parts of the trucks and brake rigging can be reduced, affording a tangible saving in first cost.

Relatively uniform friction is another characteristic of composition materials for the consideration of the brake system designer. Like high friction, it poses a problem of interchangeability in connection with existing equipment.

Quiet operation is a desirable characteristic in any brake, although present truck and car body construction renders it less important than it might have been thirty years ago.

Light shoe weight, in addition to trimming total car weight, means savings in shipping costs, as well as easier installation, which should be reflected in lower labor costs.

These are impressive advantages, and it is logical to ask why the composition shoe has not been perfected long before now. The reason is that—as is usually the case with anything new—several important disadvantages remain to be overcome. These are being worked on, literally night and day, by the engineers of our Sargent Laboratory.

Safety First

The primary consideration of every railroad is safety. When composition brake shoes are substituted for iron shoes, stopping distances are almost invariably increased, in spite of the composition shoe's higher friction. The reason for this is the nearly uniform friction at various speeds which is characteristic of composition materials. True, this uniform friction gives smoother stops; but it fails to take advantage of the extra rail adhesion available at the lower speeds. To prevent sliding at high speed, some sort of wheel slide protection is necessary. This solves the safety problem, but changes the entire economics of a composition shoe installation. Part of our research is aimed at determining whether uniform friction is inherent in compositions, or whether something can be done about it.

A second consideration affecting safety is dependability of friction. The high friction developed by composition materials is a great help to the designer of a brake system—provided the friction is always there when it's needed. However, many of the materials we have tested show pronounced glazing after light brake applications, and the friction drops to half or a third of normal. Solving this problem is an absolute must in developing a practical composition shoe.

The effects of water, with certain compositions, still pose problems which we expect aggressive research to solve.

Practical railroad men agree that an increase in emergency stop distances of over 1,000 feet simply cannot be tolerated. In every aspect affecting safety, our composition shoe must equal or surpass present iron shoe standards.

The Facts of Life

Assuming, as we do, that these problems will yield to our research—what about the life expectancy of composition shoes? Since longer life is the major attraction, a look at the factors affecting brake shoe life may be in order.

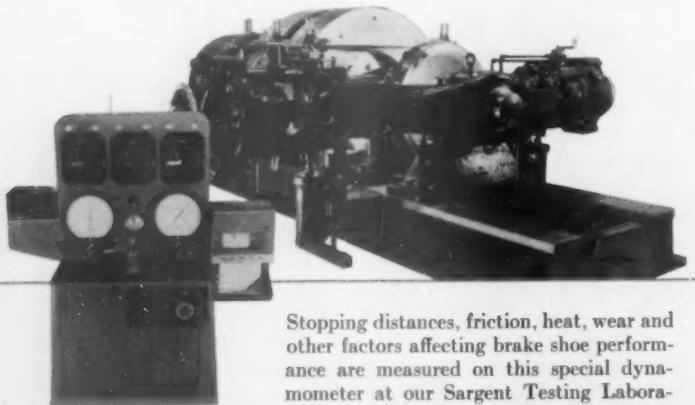
Why do brake shoes wear out? Their sole purpose is to produce friction—friction to stop the train under every condition of speed, load and weather. Friction and wear are inseparable. The engineering problem is threefold: to get the most friction for the least wear, to concentrate the wear on the shoe and not on the wheel, to dissipate vast heat without damage to either the wheel or brake shoe.

For vast energy is involved. A twenty-car train rolling at 80 miles an hour possesses enough kinetic energy to lift you and the family automobile about 48 miles into the air. To stop the train, all this tremendous energy must be dissipated. Where can this energy go? If you have electric locomotives and can tolerate a long stop, you can run their motors as generators and feed power back into the line. If you operate diesel-electrics, you can do the same thing and get rid of the electrical power in resistance grids. But most of the time operating conditions will not allow this, and the train's energy must be turned into heat in the brake mechanism—that is, in the brake shoes.

The amount of energy to be dissipated, and thus the amount of heat generated, by each brake shoe depends on the load on the wheel and the train speed—nothing else. The brake shoe material has nothing to do with it. Obviously a material that will stand high temperatures is better suited for brake shoes than one which fails at lower temperatures. A material which is a good heat conductor will likewise be preferable to a poor conductor, as it will conduct heat away from the wheel instead of driving it into the wheel.

To date our findings on wear indicate that composition shoes which show good promise in other respects wear about one and a half to three times as long as iron shoes. At present manufacturing costs, this still does not pay off from a dollars-and-cents viewpoint; but volume production will undoubtedly result in important savings which will improve the economic outlook.

Shoe wear is not the only important "life" factor. Wheel wear can be much more serious—and with some composition shoes, it is. Since composition materials are good thermal insulators, they conduct very little heat away from the wheel. Since the heat has to go somewhere, this means higher wheel temperatures. An auxiliary air cooling system, as in the disc brake, is one solution to this problem; and we are confident that there are others.



Stopping distances, friction, heat, wear and other factors affecting brake shoe performance are measured on this special dynamometer at our Sargent Testing Laboratory. Automatic instruments in the control center continuously record all data.

As far back as

1924

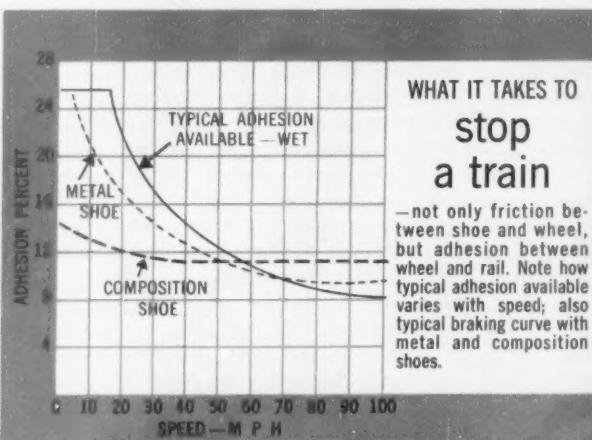
we were making and testing composition brake shoes. One of the early shoes is shown at right. Farther right are two views of today's composition shoe, now undergoing test on several railroads.



The whole question of wheel wear is one which we are evaluating in detail with reference to the composition shoe. It may be that faster wheel wear is an inevitable result of composition's high coefficient of friction and longer life. It may be that a low-friction composition—which we are working on now—will ease the wheel wear situation. In any event, wheel wear is (at this date) a problem still to be overcome—or an expense to be tolerated.

The Facts of Friction

What about friction? The friction developed between shoe and wheel is important on two counts. First, the friction should be dependable—for a given brake pressure, the friction characteristics should be the same every time. Second, the retarding force developed between the shoe and wheel should match, as closely as possible, the adhesion available between the wheel and rail at various speeds. Otherwise wheel sliding will be excessive, or stopping distances will be intolerably long.



This latter point deserves amplification. If the adhesion available between rail and wheel were constant at all train speeds, then we would want constant braking. But the adhesion is *not* constant. Up to 15 m.p.h. it is about 25%. Then it begins to fall off sharply. At 40 it is less than 20%, and at 60 it is barely 16%. At 90 it is just 12%. These are for dry rail; for wet track the fall-off is even greater.

Thus we need a brake shoe material whose friction pattern follows the rail adhesion pattern at various speeds. Do we have such a material? Cast-iron shoes with carbon inserts make a fairly good match, and our standard Diamond S is a close second. By taking full advantage of available adhesion throughout the entire speed range they give the shortest possible stops. Wheel slide may occur just before the moment of stopping, but skillful brake handling can avoid this. In any event, its effect on stopping distance and wheel life are negligible.

The nearly constant friction exhibited by composition shoes both simplifies and complicates the engineering of a safe and satisfactory braking system. In the low-speed range, absence of sudden friction build-up and final stop-



ping jerk are highly desirable. However, the lower friction increases the difficulties of stopping accurately. The over-braking at high speed may require wheel slide protection.

How Shoes Are Tested

From the foregoing requirements, it is evident that many factors must be taken into consideration in evaluating brake shoes. We are fortunate that nearly all of these factors fall in the realm of measureable physical phenomena. Measureable, yes—but not easily measureable. In fact, the bulk of our entire railway engineering laboratory consists of special-purpose facilities, largely custom-built, used for testing brake shoes.

These facilities are housed in a large two-story building at the Brake Shoe Research Center in Mahwah, N. J. Here, where most of our research is carried on, are complete foundry, machine shop, metallurgical and chemical laboratory facilities. The chemical laboratory in itself provides a complete pilot plant for producing all kinds of experimental composition shoes; and an up-to-the-minute experimental foundry can turn out myriad variations of the familiar iron shoe.

These shoes—iron or composition—are “given the works” on the huge dynamometer which develops the basic data used in all our brake shoe testing. This dynamometer is essentially a shaft carrying a standard car wheel and a group of weights, driven by a 175 hp. electric motor. Wheels from 17 to 42 inches in diameter can be accommodated, and equivalent speeds up to 160 m.p.h. are possible with a 36 inch wheel. The weights—seven rings which can be combined to give 26 different wheel loads—act as fly-wheels to duplicate the momentum of a moving train.

Brake shoes are applied to the revolving wheel by air cylinders which duplicate the forces experienced in service. Auxiliary mechanisms provide for measuring accurately the braking and retarding forces developed.

“Nerve center” of the test machine is in the control cabinet, which automatically records the test data throughout the entire braking cycle. Speed, stopping distance, torque or retarding force, brake shoe load, stopping time, and other data are charted for every stop. From this information the energy dissipated during each stop can be calculated and the shoe’s coefficient of friction computed.

The minimum equivalent wheel load is 4,000 lbs. and the normal maximum 40,000 lbs. Shoes can be applied to the wheel either singly or in clasp arrangement, with a maximum load of 55,000 lbs. on each shoe.

This brake shoe dynamometer makes possible laboratory duplication of any braking cycle for every kind of car, passenger or freight. The enormous mass of data which it has enabled us to accumulate over the years has proven of untold worth in helping us evaluate the information the machine is developing on the various composition shoe formulations now being tested.

Composition Shoes Since 1924

For more than thirty years we have tested—and are still testing—hundreds upon hundreds of composition shoes.

Early in the program we learned that very small changes in the mix or curing cycle resulted in important changes in performance. For that reason our test shoes are produced under the most carefully controlled conditions in a laboratory set up many years ago specifically to investigate and control compositions used in the automotive brake linings produced by our American Brakebloc Division.

In fact, our experience with composition shoes goes back to 1924, when we launched a thoroughgoing development to perfect such a brake shoe for railroad service. Although this program did not result in a completely successful railroad shoe, some of the materials developed were so promising for automotive application that they formed the basis for our American Brakebloc Division, a thriving operation which has grown into one of today’s major suppliers of brake linings for passenger automobiles, trucks, buses, and aircraft.

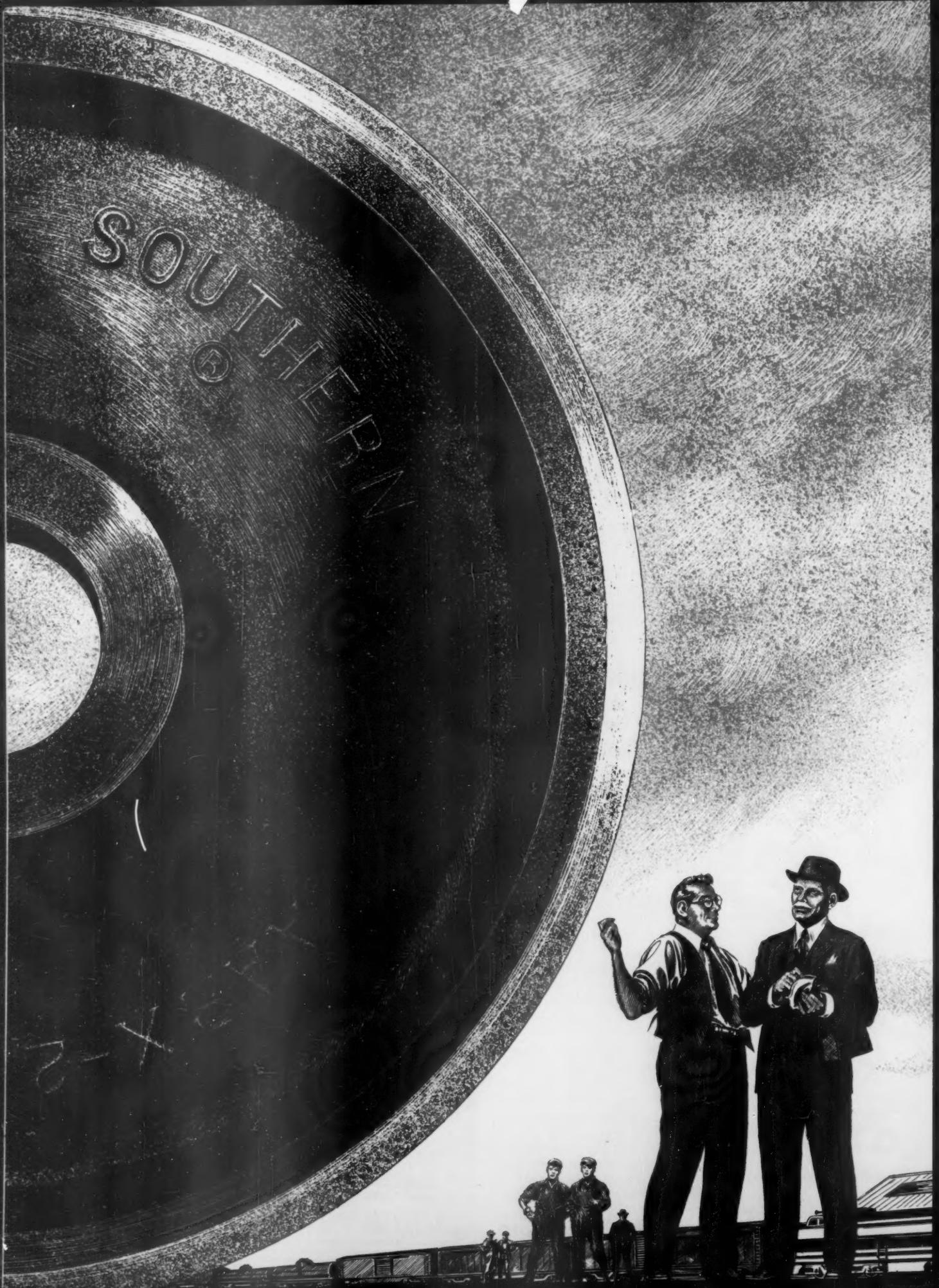
Throughout the intervening years our Brakebloc Division’s research program has steadily improved the durability and the frictional characteristics of their compositions. As these new materials went through development they were tested for railroad use. Those which showed promise were investigated further, until today we have amassed a huge store of information on composition shoes.

Such is our brake shoe research program as of mid-1956. In the ceaseless search for better brake shoes we are still learning a lot—about our older materials as well as our newer ones. And the more we learn about basic fundamentals of railway braking, the more dedicated we are to the task we have set for ourselves: to perfect a shoe that retains the best characteristics of iron, and adds the advantages inherent in composition.

It is the cumulative knowledge of years of research, years of manufacturing refinements, years of experience under actual railroading conditions, that we are endeavoring to build into our composition shoe. When this has been accomplished we will have added still another brake shoe development to the list of improvements presented to the railroads by American Brake Shoe.

Hundreds of different formulations are molded into composition shoes in the pilot plant operated by our chemical engineering laboratory. Our scientists have been continually investigating resins, binders, and other ingredients of composition frictional materials for over thirty years.





talk about ENTHUSIASM!

Our new freight car wheel—the Southern 1.5% carbon cast steel wheel—has been on the market now for just over one year. It has had enthusiastic acceptance.* Typical statements by those using this new wheel tell the story!

Vice-President and General Manager: "Impressed by progress in developing the X-2 wheel."

Private Car Line President: "The test of this wheel which we conducted on our own cars testifies to the improved product—we agree the new wheel offers a potential for saving."

Superintendent of Car Department: "Impressed by the service performance of the Southern cast steel wheel."

Engineer of Research: "I like the quality of machining. It doesn't look like a freight car wheel."

Material Inspector: "Because all important surfaces such as tread, flange and hub face are machined, we found the accuracy of these surfaces exceptional. This is the first time we have inspected wheels which were as uniform in dimensions and otherwise."

Chief of Motive Power & Equipment: "I like your practice of having an experienced representative present during mounting of initial orders."

Wheel Shop Foreman: "Easier to bore and mount than any other kind of steel wheel."

Car Inspector: "I like the idea of using steel wheel gages when condemning these wheels. It eliminates guesswork."

Car Foreman: "The markings on the back plate make it easier for my inspectors when writing up their wheel bills."

Chief Mechanical Assistant: "We should feel assured that this wheel is being made by the most modern methods in every respect."

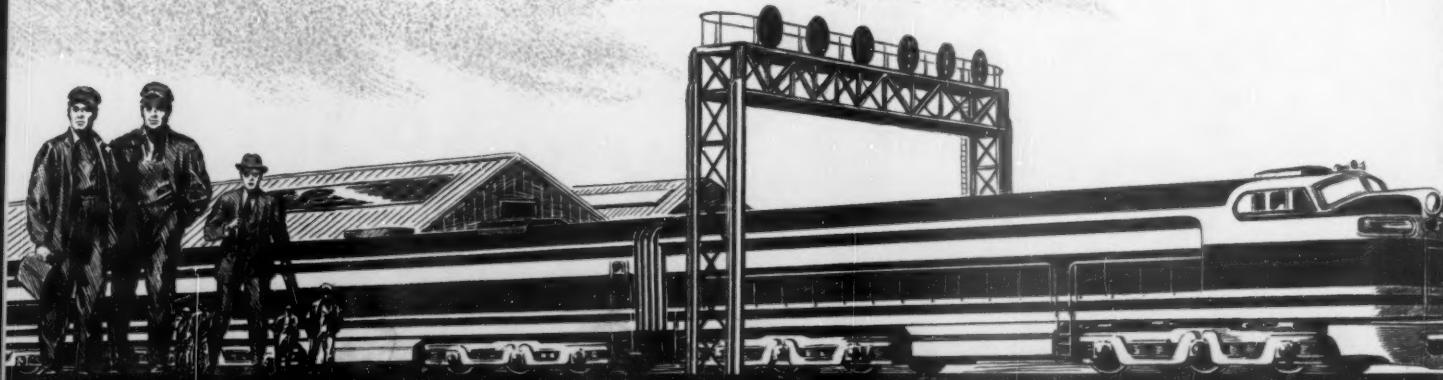
Railroad President: "It is evident you have gone into this new project in a most carefully planned and executed way."

*Over 65 different customers have ordered more than 140,000 wheels to date.



SOUTHERN WHEEL DIVISION

NEW YORK 17, NEW YORK



THE RACOR® STUD

at work...

*...reducing plate cutting
...holding line and gage
...speeding rail relaying*

It costs far too much to maintain a mile of track. But something can be done about it.

For years, rails have been the object of research aimed at preventing failures and prolonging life. That research has paid off handsomely.

But what about the cross ties? With average tie life boosted to 20 or 25 years—thanks largely to modern techniques of wood preservation—today's cost of tie renewal has become accepted as a necessary evil. Ties aren't rotting away so much—they're being shattered, plate cut, spike killed. What can you do about it?

Some years ago Ramapo engineers became convinced that something *could* be done to reduce the beating ties take. They reasoned that tie plate motion caused most of the damage . . . that controlling this motion would greatly extend tie life.

These engineers set up three requirements for a practical plate-holding device. First, it must be economical. Second, it must be simple to install and remove—without special tools, if possible. And third, it must *work*.

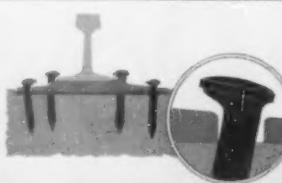
Gadgets galore sprang into the minds of these men. But how to try them out? Service tests would take years . . . and a program of testing a series of improvements, one after another, could go on for centuries!

Thus the very first requirement was for a way to test proposed devices . . . equipment that would duplicate the pounding of trains over the roadbed, to compress years of service wear into days of rigorous testing.

The result was the Ramapo tie wear test machine. In this unique machine, powerful hydraulic pistons wrench and pound a rail section against a tie plate secured to a tie with the device under test. Water, sand and oil are fed under the plate to simulate the worst possible track conditions. Wear equivalent to 15 years of main line service is approximated in 210 hours.

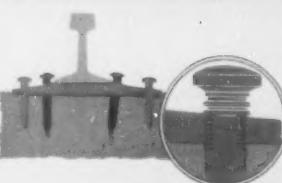
Countless tests on this machine led us to fundamental observations. First, anchor spikes exert no hold-down effect after a short time—the tie's resilience lets the plate work up and down, which soon pries the spikes up. Second, lateral motion of the plate is much more serious than vertical motion, where tie wear is concerned. Third, this lateral motion is inadequately opposed by the spikes, which are a loose fit in the plate holes to begin with. This fit gets looser with wear; and to make matters worse, the spikes "give" sideways into the wood. Maintaining line and gage, on curves especially, becomes extremely difficult.

From these findings the Racor stud was developed. Emphasis was placed on resisting lateral motion; to achieve this, the stud was designed to form an integral member with the tie plate. The stud rings are bigger than the hole in the plate; when the stud is driven home the rings deform and grip the plate tightly. The Racor stud thus forms a cantilever beam with the plate, and resists side thrust throughout its entire length—not just at the top.



Anchor spikes don't always anchor. The loose fit in the tie plate hole lets the plate work sideways and pound over the spike. This causes wide gage and rapid tie wear.

HOW THE RACOR STUD WORKS. It reduces lateral motion of the tie plate by forming an integral "beam" with it.



The Racor stud forms an integral unit with the tie plate. The entire length of the stud resists side thrust, and lack of "play" reduces plate motion—holding better line and gage, and cutting tie wear in half.

On the Santa Fe...

Within the limits imposed by friction, the studs can move vertically in the tie. Since the studs are united with the plate, the anchoring effect lasts for years.

How does the Racor stud perform? Tests on the tie wear machine repeatedly show less than half as much wear as with conventional anchor spikes. This not only means longer tie life, but better holding of line and gage.

Actual service tests bear out these improvements. Nearly 40 railroads are proving this in test installations in many parts of the country; and the recent A.R.E.A. report (Bulletin 528) on the L & N further confirms the performance of the Racor stud.

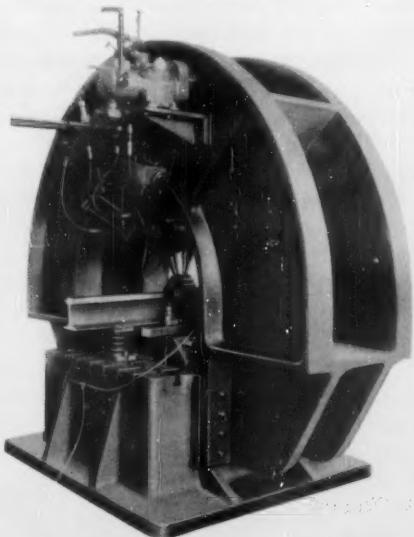
Experience is beginning to show that the Racor stud makes sound economic sense in out-of-face work. At a cost within 6¢ a tie of ordinary anchor spiking, it helps speed rail relaying by eliminating hand gaging. Every fourth or fifth tie is predrilled with a gaging machine, the plates are positioned and secured with studs, and the rail is laid. The remaining ties are drilled and studded after the rail is spiked.

The experience of the Santa Fe is a case in point. Some 1,035 miles of rail have been and are currently being laid—with Racor studs. Not only is the relaying speeded considerably, but the studs' superior line and gage holding enables the Santa Fe to take full advantage of the greatly reduced maintenance inherent in welded rail. For with no joints to inspect and tighten, line and gage become controlling factors in track maintenance. Use of Racor studs can logically be expected to cut this kind of maintenance to a fraction of its former cost.

As trains grow heavier and longer, as speeds go higher, as track maintenance becomes more costly . . . the Racor stud will find increasing application. It would appear that the time is now at hand to begin cashing in on this simple, effective way to reduce tie wear and cut maintenance costs.

For the overwhelming advantage of the Racor stud can be summed up in two words: *It works.*

This specially built machine simulates 15 years of tie wear in a matter of hours. It has enabled our engineers to investigate the behavior of many types of fastening devices. Design of the Racor stud was developed and proven on this machine.



Now that service tests by the A.R.E.A. and 38 roads are confirming our laboratory findings, Racor studs are being used for out-of-face installations. Here's why the Santa Fe is installing them on all new rail—over 1,000 miles.



How the Racor stud helps pay for itself. In the Santa Fe's current program of laying welded rail, Racor studs position every fourth tie plate to eliminate hand gaging. After rail is laid, all plates are studded to help hold line and gage. This takes full advantage of lower track maintenance possible with welded rail.



Racor Dual Drivers drive spikes automatically. These same machines can also drive Racor studs.

Snow-Free Switches

with the RACOR SNOW-BLOWER

The Racor® Snow-Blower is the easiest, safest, fastest, and most economical way to clear snow from the spaces between switch points and stock rails.

Because the Racor Snow-Blower relieves the need for manual attention in bad weather, it saves many hours of labor and many dollars of expense. It's simple to install, easy to maintain, economical to operate.

How the Snow-Blower Works

The Racor Snow-Blower is designed to keep switches clear of snow by intermittent blasts of compressed air. Simple in construction, it consists of a source of compressed air, an air filter, an anti-freeze injector, a cycling device, an air valve and two manifolds equipped with adjustable nozzles.

The compressed air can be supplied from a small compressor for a single switch, from a larger compressor with sufficient capacity to serve several switches, or from a central air supply. The manifolds attached to the stock rails cannot interfere with the switch points.

Compressed air passes through the filter, anti-freeze injector, cycling device and then through connecting pipes into the manifolds. The air speed created by the manifold jets, approximately sixty miles an hour, removes snow and dirt from the opening between the switch points and the stock rails.

The blowing cycle can be varied within certain limits, but the usual cycle develops a blowing time of about four seconds in thirty-six seconds. This timing was found to be adequate to keep a switch clear of snow during a total snowfall of $64\frac{1}{2}$ inches in six days, with an air supply of approximately 100 p.s.i.

Compare These Advantages

The Racor Snow-Blower has many advantages, the more important being: Extremely low operating costs—by far the lowest of any other snow removal method. No melted

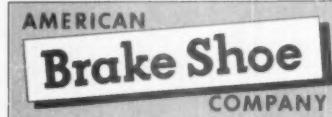


snow; hence no problem of drainage or icing, or necessity of removal of ice formed from melted snow. No flame to blow out from high winds or passing trains. No danger of fire as a result of leaking oil from tank cars or from diesel engines that might stop over switch. No chance to burn up ties or insulation. If desired, the Racor Snow-Blower can be operated by remote control.

Dirt and sand, which might be carried into the switch with snow, are blown out and not left as a residue, as is often the case when snow is melted through heating methods. The introduction of alcohol in atomized form through the anti-freeze injector, combined with the effect of blowing dry compressed air, has proved very effective during sleet and freezing rain conditions.

Safety is perhaps the most important advantage of all, as employees are not required to manually clear switches under traffic during blinding snowstorms.

The Racor Snow-Blower has been field-tested and proven during five winters under extreme snow conditions. Let your Racor engineer help you put it to use next winter!



RAMAPO AJAX DIVISION

CHICAGO 6, ILLINOIS

IN CANADA: DOMINION BRAKE SHOE COMPANY, LTD.

Yours to Command

*The combined resources of
a large organization
long experienced in meeting
railroads' specialized needs*

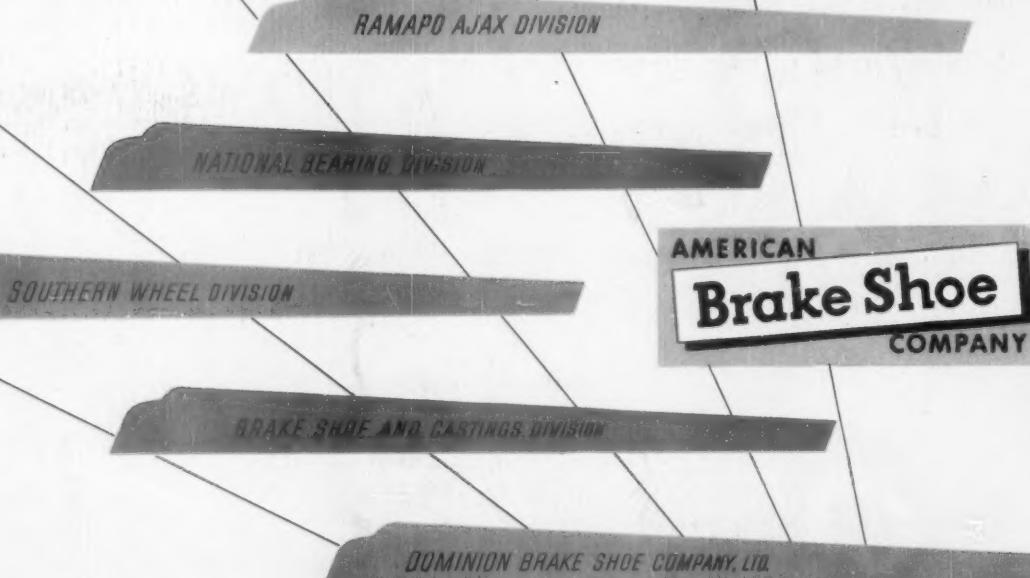
Not everyone can serve the railroads well. Only the test of time reveals those who will measure up.

The railroad industry's outstanding suppliers possess detailed, first-hand knowledge of railroading. Of railroading as it is done, of conditions as they are. Much of this valuable working knowledge is embodied in the thousands of men of American Brake Shoe who have devoted their entire lives to the railroad business.

The brake shoes and wheels, the bearings and trackwork that come from Brake Shoe's manufacturing facilities are sound, practical products because of this singleness of purpose and wealth of experience with *your* problems.

These Brake Shoe assets are yours to command . . . in the interests of *Better Railroading*.

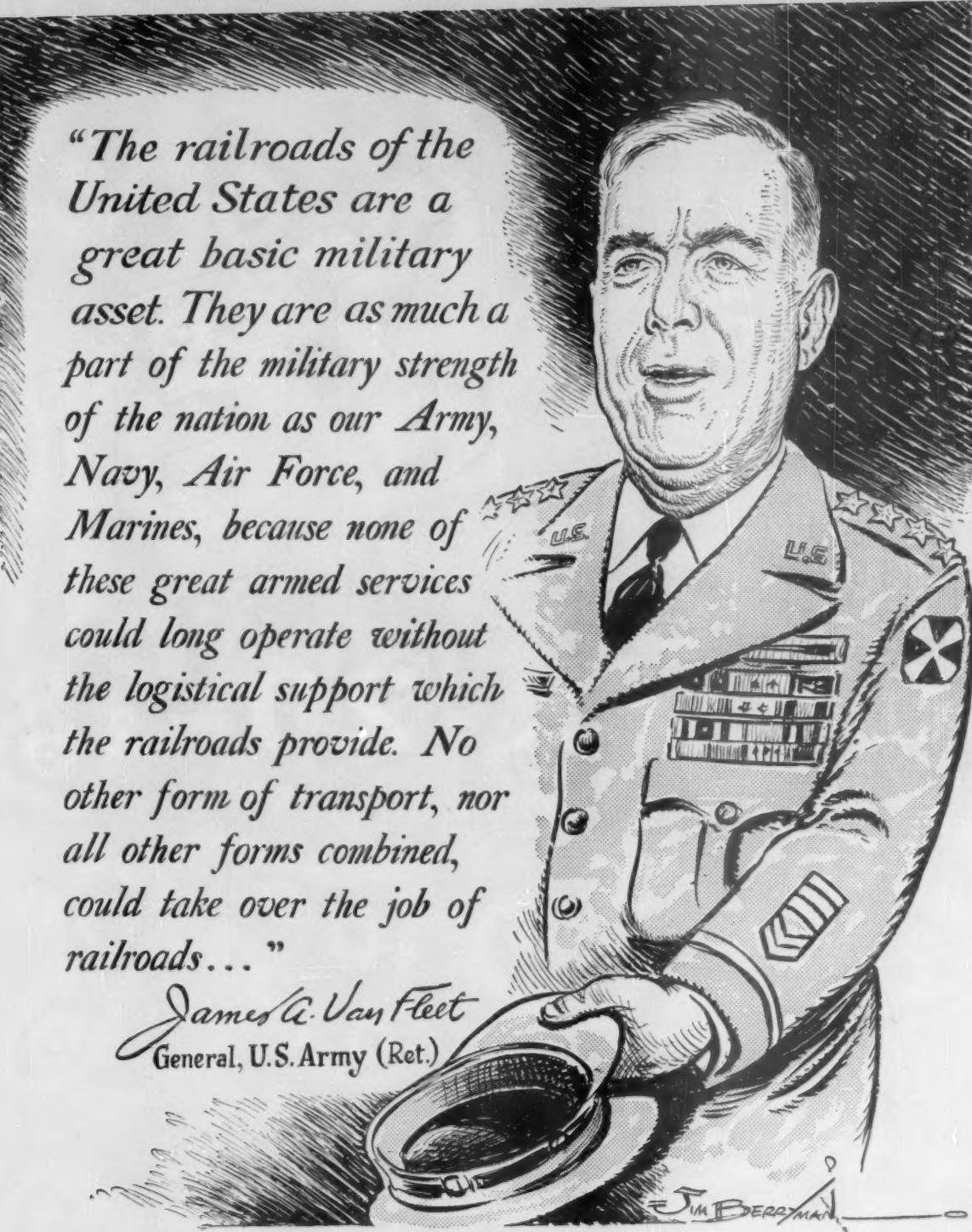
AMERICAN BRAKE SHOE COMPANY • 230 PARK AVENUE • NEW YORK 17 • N. Y.



**BETTER
RAILROADING**

"The railroads of the United States are a great basic military asset. They are as much a part of the military strength of the nation as our Army, Navy, Air Force, and Marines, because none of these great armed services could long operate without the logistical support which the railroads provide. No other form of transport, nor all other forms combined, could take over the job of railroads..."

*James A. Van Fleet
General, U.S. Army (Ret.)*



From the booklet, "Rail Transport and the Winning of Wars," by General James A. Van Fleet, U. S. Army (Ret.), Commanding General, 8th Army, Korea, 14 April, 1951 — 11 Feb., 1953.

A free copy of this booklet is available from the Association of American Railroads, Room 931, Transportation Building, Washington 6, D. C.

NOW.

MINER

New

CLASS

FR-20-18

20 $\frac{1}{8}$ " LONG



CERTIFIED BY THE ASSOCIATION



CLASS FR-24-58

24 $\frac{5}{8}$ " LONG

RUBBER DRAFT GEARS

We present two all-rubber gears, each with a rated capacity of 34,875 ft. lbs. at 2 $\frac{3}{4}$ " travel accomplished at pressures that can be safely transmitted through the coupler shank.

These gears meet tomorrow's demands for the utmost in lading protection, and the compression characteristics of the patented Miner rubber unit will provide slack-free train operation for years and years.

Assembled in lengths of 20 $\frac{1}{8}$ " or 24 $\frac{5}{8}$ ". Meeting every new car, rebuilding, or replacement requirement.

No followers needed with the FR-24-58 design. The FR-20-18 Gear uses two follower plates, which are oftentimes available in railway stocks.

Designed and service-tested to eliminate lading damage and save railroad funds.

Manufactured as self-contained units, precompressed for easy application to cars or locomotives.

W. H. MINER, INC. CHICAGO

OF AMERICAN RAILROADS

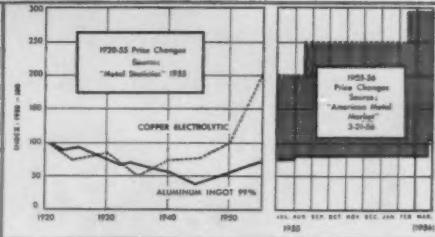
NEW KAISER

Only half



1 LIGHTWEIGHT to reduce fatigue! Aluminum welding cable is only about one-half the weight of copper welding cable. Thus, it's twice as easy to lift and drag around—an important factor in reducing fatigue and increasing efficiency on the job.

ECONOMICAL! The favorable price of aluminum, when compared to copper, provides important economies. And you continue saving money even when you specify aluminum one or two AWG sizes larger than copper to offset its slightly less amperage carrying capacity.

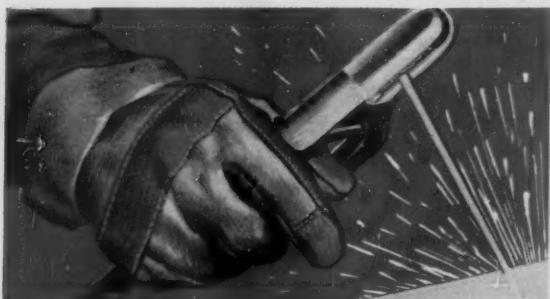


ALUMINUM WELDING CABLE!

the weight of copper cable—plus economy!



2 EXTREMELY FLEXIBLE to make work easier! The fine wires used for aluminum welding cable assure maximum flexibility, plus toughness and durability. Aluminum welding cable can easily be looped into a circle with thumb and forefinger—demonstrating the freedom of movement it provides to the weldor.

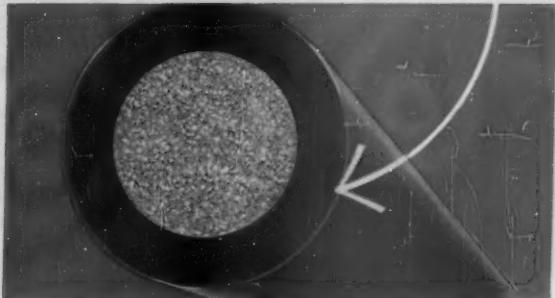


4 COOLER to make handling more comfortable! Aluminum welding cable dissipates heat almost twice as fast as copper cable of similar size. As a result, the aluminum cable and electrode holder is far cooler and more comfortable to handle.

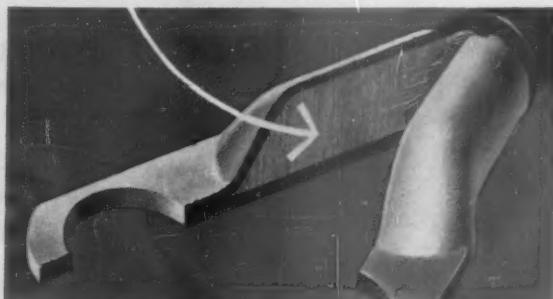
This new welding cable is another of a wide line of Kaiser Aluminum electrical conductors that are providing important savings to the railroad industry. Write for our information folder, "New Advantages in Arc Welding Cable with Aluminum Welding Cable."

Kaiser Aluminum is also a leading producer of building wire, distribution wire and bus conductor.

For details write to Kaiser Aluminum & Chemical Sales, Inc., General Sales Office, Palmolive Bldg., Chicago 11, Illinois; Executive Office, Kaiser Bldg., Oakland 12, California.



3 DURABLE to withstand hard use! Tough rubber jacket resists abrasion, acids, sunlight and heat. For extremely hard usage, a neoprene jacket is available which offers maximum resistance to abrasion, acids, alkalies, grease, oil, sunlight and heat. In addition, the neoprene jacket is flame-resistant.



5 EASY TO SOLDER for tight copper or brass terminals! Terminal lugs or accessories can be soldered to aluminum welding cable by a simple 4-step method: 1) heat socket or lug barrel with small torch flame, 2) apply non-zinc chloride type flux inside barrel, 3) insert soldering wire while applying heat, and fill $\frac{3}{4}$ full, 4) gently work stripped end of cable into solder socket, remove flame, and allow to cool. Connection is then ready for use. Aluminum welding cable also takes good mechanical connections.

* * *

To take full advantage of new aluminum welding cable, contact your welding equipment manufacturer or your nearby welding supply distributor. Aluminum welding cable is produced for equipment manufacturers by Kaiser Aluminum at the company's Newark, Ohio wire and cable mill.

Kaiser Aluminum

Announcing a new line

New standards of performance . . .

New standards in long service life

ALCO's constant research and engineering for better, more versatile motive power has resulted in a completely new line of road switchers: the DL 701, DL 702 and DL 600.

The new units have incorporated all the most recent developments in locomotive design.

For its new locomotives, ALCO engineers developed a new diesel engine—the Model 251—using all the best of proved engine features.

Every part . . . every component . . . every assembly of the 251 engine was designed from the ground up. The new design has been subject to almost three years of laboratory testing and two years of road service. Its

performance has been outstanding.

As a result, the new, proven 251, together with new simplified controls and generator, sets new standards of continuous and short-time performance, in long-life service and in lower maintenance.

With unprecedented power and versatility, ALCO's new road switchers can haul more tons per train in fast freight and passenger runs than ever before . . . handle branch line and switching assignments with greater earning power.

We invite you to talk with your nearby ALCO representative for full information on this new, fully tested motive power development.



ALCO PRODUCTS, INC.

New York

SALES OFFICES IN PRINCIPAL CITIES

ALCO DL 701—
1800-hp, 4-motor Road Switcher

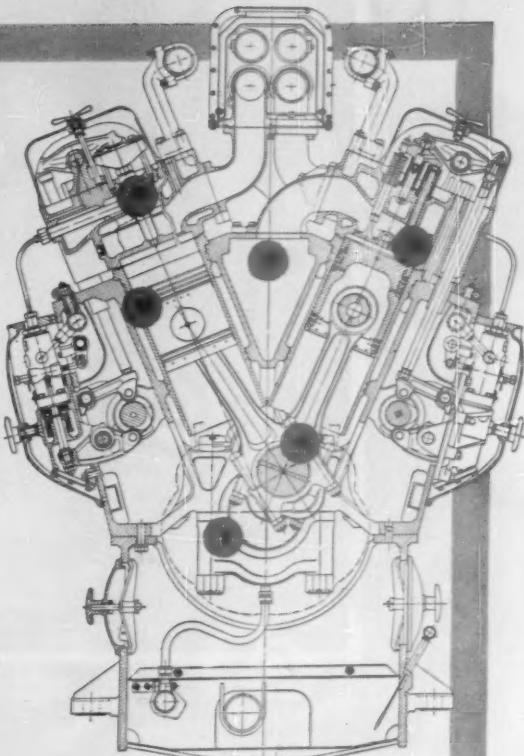


of ALCO Road Switchers

Some of the New Proven Features of the ALCO 251 DIESEL ENGINE

1. **NEW** saddle-cap design — serrated to eliminate fretting under shear loads. Obviates chance of misalignment during reassembly.
2. **NEW** aftercooler — lowers turbocharger, manifold, piston and cylinder temperatures.
3. **NEW** replaceable valve seat inserts — give maximum cylinder head life.
4. **NEW** bearing design — wider grooveless center main bearing increases oil-film thickness 150 per cent. Partially grooved connecting-rod bearing increases thickness 100 per cent. All bearings more rigid.
5. **NEW** fuel-injection equipment — provides better combustion, more economy.
6. **NEW** Ni-Resist insert piston and heat-treated piston rings — give maximum piston, ring and liner life.

ALCO also produces freight "A" and "B" units, passenger "A" and "B" units, and switchers with the new Model 251 diesel engine.



HERE'S HOW



UNITED STATES STEEL

USS WROUGHT STEEL WHEELS SAVE YOU MONEY

LESS DEADWEIGHT

More Cargo

Because they are lighter than ordinary wheels, there will be some saving of unsprung weight, which can be directly converted into payload capacity—or result in savings due to the decreased load. Another advantage—reduced unsprung weight means less pounding on the track system.



FEWER SERVICE INTERRUPTIONS

More Service Miles

USS Wrought Steel Wheels last far longer than ordinary wheels, and in the long run, cost less. In addition, a car rolling on Wrought Steel Wheels spends more time in service and less time on a repair siding, resulting in increased revenue to the railroad.



LOWER MAINTENANCE COSTS

Higher Profits

Elimination or reduction of labor requirements represents one of the best ways to save money today. Maintenance expenditures for cars equipped with wear-resistant Wrought Steel Wheels are considerably lower, as they require far less wheel servicing than cars with ordinary type wheels.



WHY U.S.S. WROUGHT STEEL WHEELS LAST LONGER

USS Wrought Steel Wheels deliver more ton-miles per dollar than any other type wheel because they possess *hardness*, which enables them to resist wear; *strength*, which carries the heavy load; and *ductility*, which keeps sudden brittle fractures to a minimum. These inherent properties of steel are improved by forging, roll-

ing, and control-cooling—the *Wrought* process.

Two strategically located wheel shops are prepared to fill your orders for Wrought Steel Wheels: McKees Rocks (Pittsburgh), Pennsylvania shop, serving the East and Southeast, and the Gary, Indiana shop, supplying the Western and Southern Lines.

UNITED STATES STEEL CORPORATION, PITTSBURGH
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.

U.S.S. WROUGHT STEEL WHEELS

UNITED STATES STEEL



6-70

Here are
3 ways to look
at your business
in Railroading...

Profit from the lessons of the past . . . make the most of today's new techniques and technologies . . . plan to capitalize on the swift-running potentials of the future. Railway Age helps you do all three in its big Centennial Number coming up in September . . . with a look back, a look around and a look ahead at the forward march of railroading.

There's more than a magazine's Happy Birthday at stake in this one. Readers will find it the most informative, invaluable planbook in the industry . . . an issue to be picked up, read and reread long after Railway Age's anniversary is forgotten. Advertisers will recognize here a timely sales tool, especially equipped to catch and hold the interest of RR management for months to come.

Every seller in the market should utilize it to lay out his full product line for top-drawer buying powers. If you're an advertiser, take your cue from the editors . . . dramatize your contributions to the market's progress, show how your product saves money today, what it can do to step up efficiency tomorrow. Use plenty of space to tell your story and tell it well . . . in Railway Age's Centennial Number. *Closing for advertisers . . . August 1st.*

September 1956
Centennial Number **RAILWAY AGE**

A SIMMONS-BOARDMAN PUBLICATION (ABC-ABP)

...provide
mile after mile of
comfort and safety -



Use **A.A.R. STANDARD TYPE H**
TIGHTLOCK COUPLER
and
ATTACHMENTS



BUILT-IN QUALITY



T-25-A
RADIAL CONNECTION & SEAT

Y-50 YOKE
(CONVENTIONAL GEAR)

Y-65 YOKE
(TWIN CUSHION RUBBER GEAR)

- NO SLACK IN COUPLER CONTOUR . . . NOISE ELIMINATED
- COUPLER INTERLOCK PROVIDES MAXIMUM SAFETY
- IMPROVED LOCK ANTI-CREEP PROTECTION
- MINIMUM WEAR AND MAINTENANCE
- MEETS A.A.R. PASSENGER CAR SPECIFICATIONS

FOR COMPLETE INFORMATION . . CALL or WRITE . .

Refer Advt. No. 11879





Superbanites

48 New Double Deck Commuter Coaches are

WAUKESHA
equipped



Every car is self-sufficient—Waukesha engine-driven equipment supplies air conditioning and all electric needs

- Chicago suburbanites, riding in C & NW Superbanites—the 48 new air conditioned double-deck coaches—will enjoy the latest and finest in commuter comfort and service.

Northwestern has 16 of these coaches now in service; 16 ready to put in service; 16 to be delivered—a total investment of almost \$7-million. With 7,856 seats these 48 cars equal the capacity of 100 of the road's conventional suburban coaches.

Each car is self-sufficient—with two Waukesha

propane engine-driven Ice Engines furnishing the air conditioning; and one Waukesha propane engine-driven 9 KW Enginator supplying all electrical requirements.

C & NW first used Waukesha railway equipment in 1935. Since then over 40 railroads and the Pullman Co. have become users of Waukesha Railway Propane Air Conditioning Units; and Railway Enginators, Propane and Diesel. Send for descriptive bulletins.



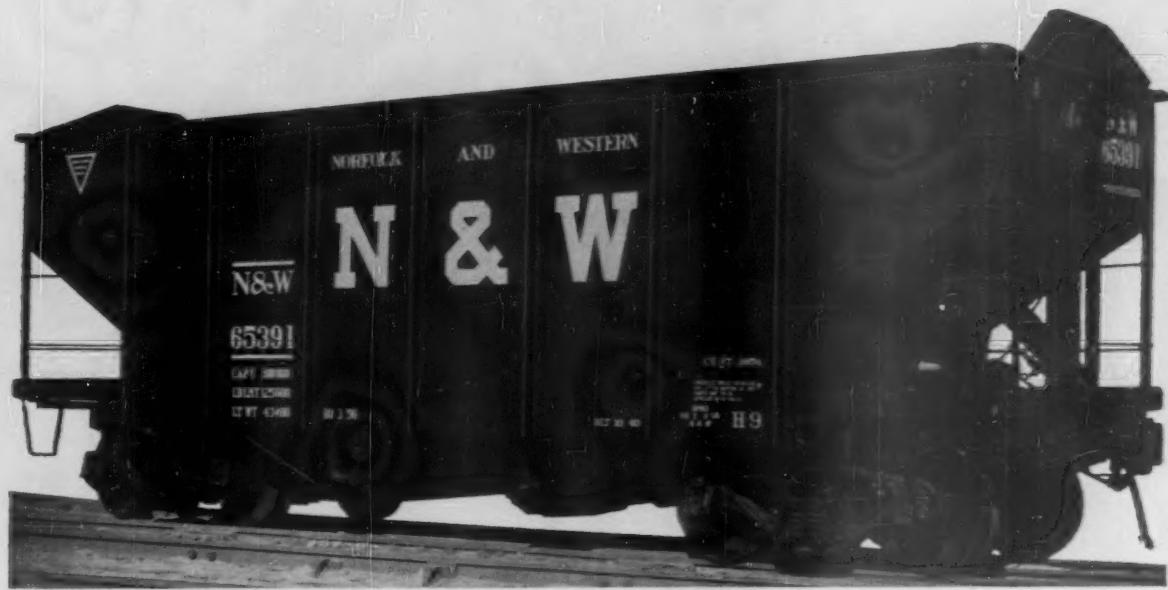
RAILWAY DIVISION

318

WAUKESHA MOTOR COMPANY • WAUKESHA, WIS.

YOLoy E PLATES

give new life to N&W hopper cars



THE YOLoy FAMILY

High in resistance to corrosion, shock and vibration, easy to fabricate, easy to weld.

YOLoy S
(Nickel-Copper)
High Strength Steel

YOLoy E
(Nickel-Chrome-Copper)
High Strength Low Alloy
Steel

"Yoloy "E" Plates are used in Norfolk and Western shops for open-top coal car construction. This extra tough, high-strength, low-alloy steel gives added years of useful life to hopper cars."

Because of its superior strength and high resistance to corrosion, abrasion and shock, Yoloy E lasts longer. This means lower maintenance and longer car life, thus contributing to reduced ton-mile cost of rolling stock.

Yoloy E has good weldability and forming characteristics which make it ideal for railroad use. Many years of actual service on American railroads continually prove the extra values in the Yoloy Family of Steels.



Youngstown

THE YOUNGSTOWN SHEET AND TUBE COMPANY

Manufacturers of
Carbon, Alloy and Yoloy Steel

General Offices Youngstown, Ohio District Sales Offices in Principal Cities.

SHEETS - STRIP - PLATES - STANDARD PIPE - LINE PIPE - OIL COUNTRY TUBULAR GOODS - CONDUIT AND EMT -
MECHANICAL TUBING - COLD FINISHED BARS - HOT ROLLED BARS - WIRE - HOT ROLLED RODS - COKE
TIN PLATE - ELECTROLYTIC TIN PLATE - BLACK PLATE - RAILROAD TRACK SPIKES - MINE ROOF BOLTS

Stand-by power to spare . . .



Railroads depend on EDISON batteries for four important power services

- operating power on industrial trucks
- stand-by power for communications equipment on caboose cars
- stand-by power for air conditioning and lighting on passenger train cars
- stand-by power for all types of railway signaling



where you need it most—



an EDISON battery won't let you down

UNEXPECTED delays may stop a freight train...but it's at moments like this that communications and other electric services on caboose cars must keep going.

With EDISON batteries as stand-by power, communications equipment will operate at top performance for long periods while the train is motionless and generator power is interrupted. The reason is, EDISONS can be safely charged at higher rates, assuring a continuously high charged con-

dition ready for any emergency.

Another important advantage in freight train service is the rugged all-steel construction of EDISON batteries. They're built to withstand the jarring and other mechanical abuse associated with freight operations.

EDISON batteries are not subject to sudden failure. They are so dependable that, after years of the heaviest duty, they may be shifted to lighter loads, such as railway signaling and communications,

where the utmost reliability is still of paramount importance. No other battery can deliver so much work per dollar of cost.

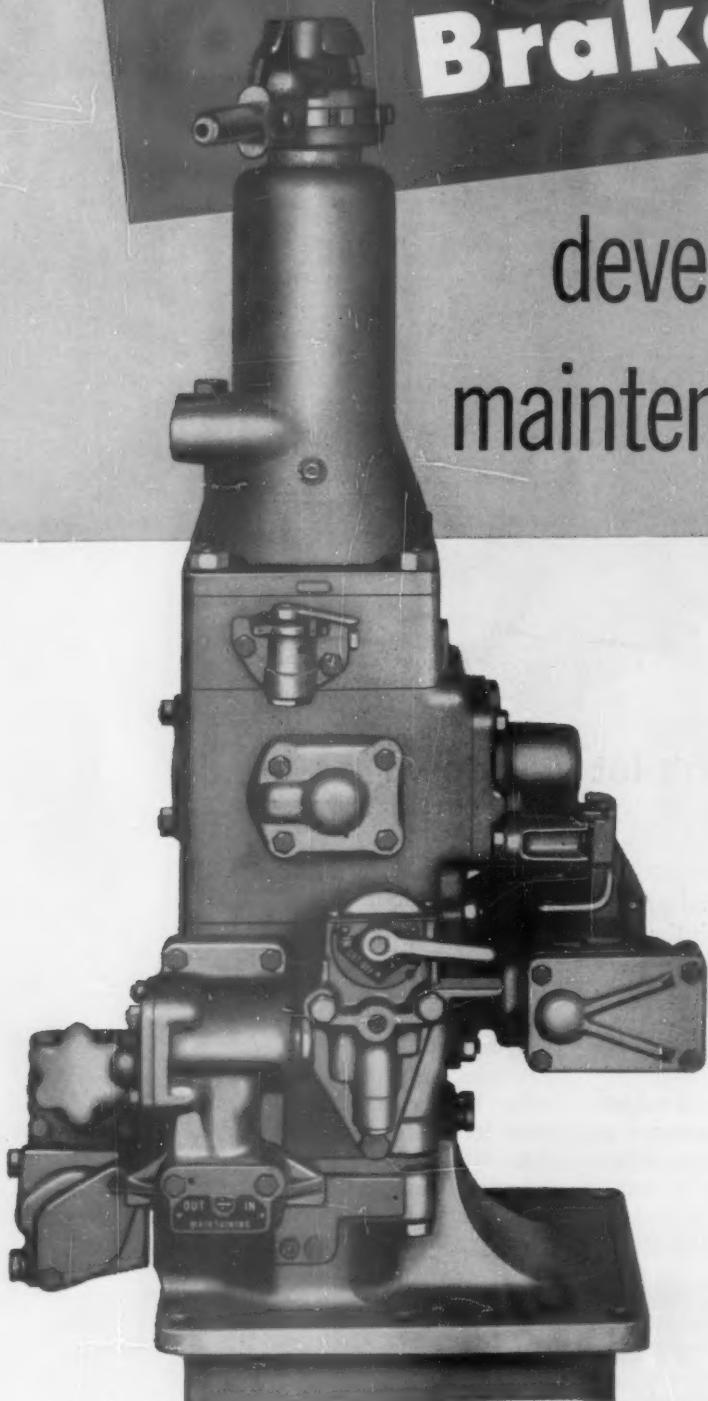
Further information on EDISON's foolproof operation, light weight, resistance to temperature extremes, easy maintenance and other features is available from your local Edison field engineer. Call him today or write Edison Storage Battery Division, Thomas A. Edison, Incorporated, West Orange, New Jersey.

You get more dependable power—lower over-all cost with



DS-24-M Brake Valve

develops outstanding
maintenance economies



THE Brake Pipe Pressure Maintaining Feature provides more uniform distribution of braking throughout the train. It develops these outstanding maintenance economies—

1. Less rigging maintenance and fewer damaged brake heads.
2. More uniform brake shoe wear.
3. Reduced wheel damage from overheating at front end of train.

These economies can be realized on 24-RL Brake Valves now in service by substituting a Conversion Filling Piece for the existing filling piece.

Write for our Circular Notice No. 1130 which gives complete details.

Westinghouse Air Brake
COMPANY

AIR BRAKE DIVISION  WILMERDING, PENNA.



He makes your problems his career...

He's equally at home in your car shops . . . engineering department . . . executive offices. He's factual and well-informed—your National representative.

Most important of all, he's backed by a *complete organization* . . . an organization with 89 years' experience in solving your type of problem . . . an organization young in spirit, with the enthusiasm to

turn today's problems into tomorrow's commonplace.

Add to all this . . . National's Technical Center, one of the most extensive testing and development laboratories of its kind in the world . . . and National's peerless production facilities.

Perhaps we *should* say—**NATIONAL** makes your problems its career.

Your National Representative can give you the answers to these important questions



NATIONAL MALLEABLE
and STEEL **CASTINGS COMPANY**

Cleveland 6, Ohio

COUPLERS • YOKES • DRAFT GEARS • FREIGHT TRUCKS • SNUBBER PACKAGES • JOURNAL BOXES and LIDS



"...but don't Type F couplers cost more than ordinary couplers?"

"The initial price is higher, but the ultimate *cost* is no greater. In fact, it's probably less . . ."

"How do you figure that?"

"First of all, the elimination of practically all vertical movement between mated F coupler heads, and the lesser amount of free slack, materially reduce wear on knuckles and coupler heads. Coupler contours remain within gage longer and this further reduces maintenance costs."

"Granted—when you couple two Type F's. What about coupling F's with other types?"

"Nominal free slack between an F and an E is about 30 percent less than with two E's. In addition, National Type F couplers have other features that are difficult to assess in terms of dollars, and that are even more important."

"You mean safety?"

"Certainly. Because of its superior safety features, the Type F coupler will reduce costly freight-train partings while increasing operating efficiency. Don't forget, the F is about 22 percent stronger than the E coupler."

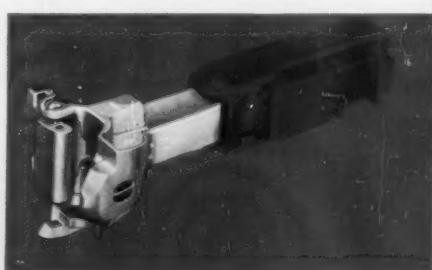
"You mentioned elimination of vertical movement before. How is that achieved?"

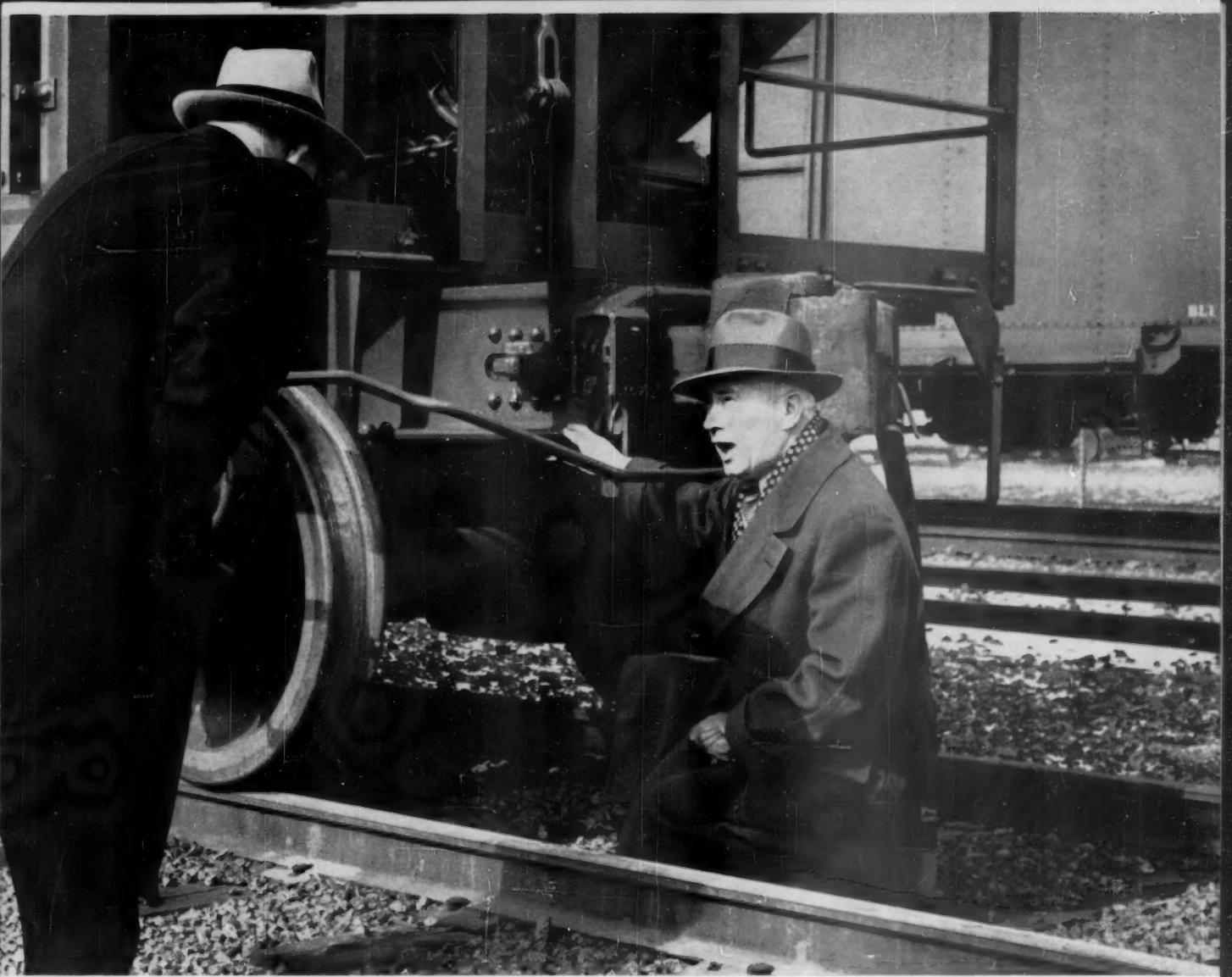
"Notice these aligning wings, similar to those on the Type H Tightlock. This interlocking feature prevents vertical slips over . . . helps to keep cars in alignment and helps to prevent them from climbing, overturning or jackknifing."

"I see what you mean by 'difficult to assess in terms of dollars,' but, in my book, safety adds up to dollars saved. Let's talk about deliveries on National Type F couplers . . ."

You are invited to visit National's exhibition room where the above photo was taken.

NATIONAL MALLEABLE and STEEL CASTINGS COMPANY





"... just what can we do to prevent damage here?"

"That's easy—switch to the National MF-400 Rubber-Cushioned Draft Gear. It fits both standard pocket and yoke."

"Yes, I know that. But what does it have to offer over friction gears?"

"Well, first of all, tests prove that most coupling is performed at 7 to 8 mph—not at 4 to 5 mph. And at today's higher speeds, friction gears simply don't have it . . ."

"In what respects?"

"I don't want to sound too technical but here's why. The impact quantum is the amount of work that must be done in any impact. Purpose of the rubber cushioning is to permit this work to be done with a minimum of force transmitted to the car. This reduction in force

is performed by the *extra-long travel* and *high cushioning capacity* of National Rubber Draft Gears."

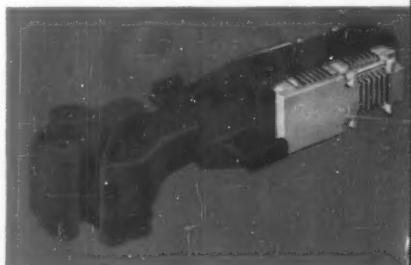
"Longer travel makes lots of sense to me. Do you have any test figures on capacity of your National Rubber Draft Gear?"

"We certainly do. We measure and record forces on modern electronic instrumentation installed in cars on test tracks at our new Technical Center. That gives National *duplicated—not laboratory simulated—operating conditions . . .*"

"Now you're talking. Let's go into my office and go over actual figures . . ."

National Rubber-Cushioned Draft Gears give you protection when you need it—at high impact speeds!

NATIONAL MALLEABLE and STEEL CASTINGS COMPANY





"...just why do wedges and wedge springs last longer in a C-1 Truck?"

"Longer life is based on two factors: design of the friction control mechanism itself, and materials of construction."

"I'm familiar with the C-1 design that uses large wedges and low-stressed wedge springs located in the side frames. How about materials of construction?"

"Well first of all, the C-1 uses a cast-steel wedge of a special analysis and hardness. This, combined with full-width bearing in the side frame pocket, gives a "polishing" action without any scoring or gouging. The flat surface of the wedge bears against a hardened, spring steel wear plate welded to the bolster. The wear plate has a slightly lower hardness value than the wedge. And it's this hardness

ratio that prolongs the life of the C-1 wedge."

"But how about wedge springs?"

"Since, in the C-1, the wedge spring bisects the wedge angle, less spring pressure is needed to operate the wedge. Low stress and low load rate, combined with a cold-wound, shot-peened spring, make a good maintenance picture. In fact, the C-1 wedges and wedge springs should last the life of the car."

"That all seems to add up. Can you back up that claim?"

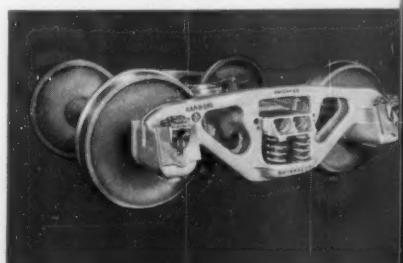
"Sure. Now just take a look at these actual service records . . ."

"Now wait a minute. Mind if I call in some of my other men to listen to the C-1 story?"

NATIONAL MALLEABLE and STEEL CASTINGS COMPANY

Cleveland 6, Ohio

COUPLERS • YOKES • DRAFT GEARS • FREIGHT TRUCKS • SNUBBER PACKAGES • JOURNAL BOXES and LIDS



Few problems in railway maintenance require such routine and such consistent attention as that of weed control. And this explains, to a great degree, why experienced personnel everywhere have come to rely on Fairmont weed-control products to assist them in this vital task. For they know that only Fairmont's equipment provides the maximum of reliability and dependability of performance. In basic design, in quality of materials, in craftsmanship and soundness of construction . . . each represents the finest product of its kind available to the industry. And through years of actual performance in the field, each has written an impressive record of trouble-free operation, endurance and longevity. We will be most happy to give you complete information on any of these Fairmont products at any time, and to explain to you their individual specifications and capabilities. You will find, we know, that, when you think of weed control, it *pays* to think of Fairmont!

When you think of

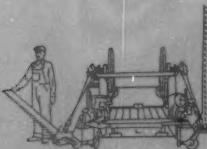
WEED CONTROL

. . . think of

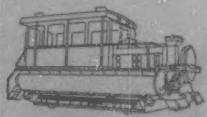
Fairmont



W55 SERIES B WEED BURNER is a thorough and efficient weed killer and snow melter. Burner heads can be positioned quickly and easily. Intense flame destroys vegetation regardless of roadbed contour.



M5 SERIES A WEED MOWER provides fast, efficient cutting at minimum cost. An automatic cutter bar release, heavy-duty sickles and rugged, clutch-equipped engines highlight its performance characteristics.



W66 SERIES B WEED SPRAYER is a self-propelled unit fitted with two sets of differently sized nozzles which may be used together or separately. Minimum crew. Features three-speed, two-way drive with fluid coupling.



W78 SERIES A WEED BURNER is a trailer type unit which applies liquid weed killers. Light weight, compact, low cost. Two-cylinder engine, 800-gallon tank and 11-nozzle spraying. Efficiently designed and soundly built.



W44 SERIES D WEED BURNER is a tow unit designed for short lines and limited burning. Two outer burning arms are counterbalanced for easy operation. The entire unit can be operated and controlled from within the cab itself.



W24 SERIES A WEED MOWER features cutting bars which are hydraulically operated by an engine-driven pump. Sickles are driven by hydraulic motors. Safety snap-sickle design. Includes power grinder, turntable.

FAIRMONT RAILWAY MOTORS, INC., FAIRMONT, MINNESOTA

MANUFACTURERS OF INSPECTION, SECTION AND GANG CARS, HY-RAIL CARS, MOTOR CAR ENGINES, PUSH CARS AND TRAILERS, WHEELS, AXLES AND BEARINGS, BALLAST MAINTENANCE CARS, DERRICK CARS, OIL SPRAY CARS, GROUTING OUTFITS, TIE RENEWAL EQUIPMENT, RAIL RENEWAL EQUIPMENT, WEED CONTROL EQUIPMENT.



it's Barber Stabilized trucks
AT BOTH ENDS!

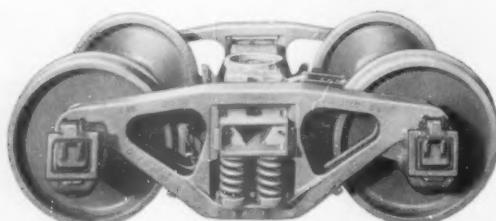
THE MECHANICAL DEPARTMENT

... wants easy dismantling for various servicing operations, *fast* re-assembling, *low* labor costs. Barber Stabilized Trucks . . . simple in design and efficient . . . provide these advantages.

THE TRANSPORTATION DEPARTMENT

... wants smooth, easy rides for valuable cargoes — lowered damage claims. Transportation men want to cooperate, too, with mechanical men who *know* how Barber Stabilized Trucks save in maintenance costs. So they agree!

Specify Smoother-Riding



BARBER STABILIZED TRUCKS

Standard Car Truck Company, 332 S. Michigan Ave., Chicago 4, Illinois. *In Canada:* Consolidated Equipment Co., Ltd., Montreal 2.



This is the sixth in a series of advertisements about the people of Standard.

Traveling Man: Territory, Northeast

This is John Coolidge.

John's job is service to the customers of Standard Railway Equipment Manufacturing Company. His hobby, too, is railroading, plus a Navy-inspired interest in boats.

Officially, John is an assistant vice-president. He covers the railroads of the Northeastern one-fourth of the United States.

More often than not, you'll find him *outside* his New York office delivering traditional Standard Service to the roads.

In fact, service comes first throughout the Standard organization. Whether your order is for one car set or hundreds, you can depend on Standard to get equipment back on the road and paying its way.

Standard RAILWAY EQUIPMENT MANUFACTURING COMPANY

GENERAL OFFICE: 4527 Columbia Ave., Hammond, Ind. • New York • Chicago • St. Paul • San Francisco
Standard Railway Equipment Manufacturing Company, (Canada) Ltd., Sun Life Building, Montreal

MANUFACTURERS OF: Standard Improved Dreadnaught Ends—The Standard Diagonal Panel Roof—Standard Metal Floor Protectors—
Standard Coupler Operating Device—Standard Positioning Device with Coupler Height Adjustment—and the Standard Wheel Truing Machine

WE CARRY THE HEAVY SPARES

**AND SAVE
RAILROADS
AN INVESTMENT
OF MILLIONS**

**THAT'S ELECTRO-MOTIVE
"UNIT EXCHANGE"!**

PURCHASE of 100 traction motors as shop float by one railroad represents an investment of approximately \$500,000. Annual return on such an investment at 6% amounts to \$30,000.

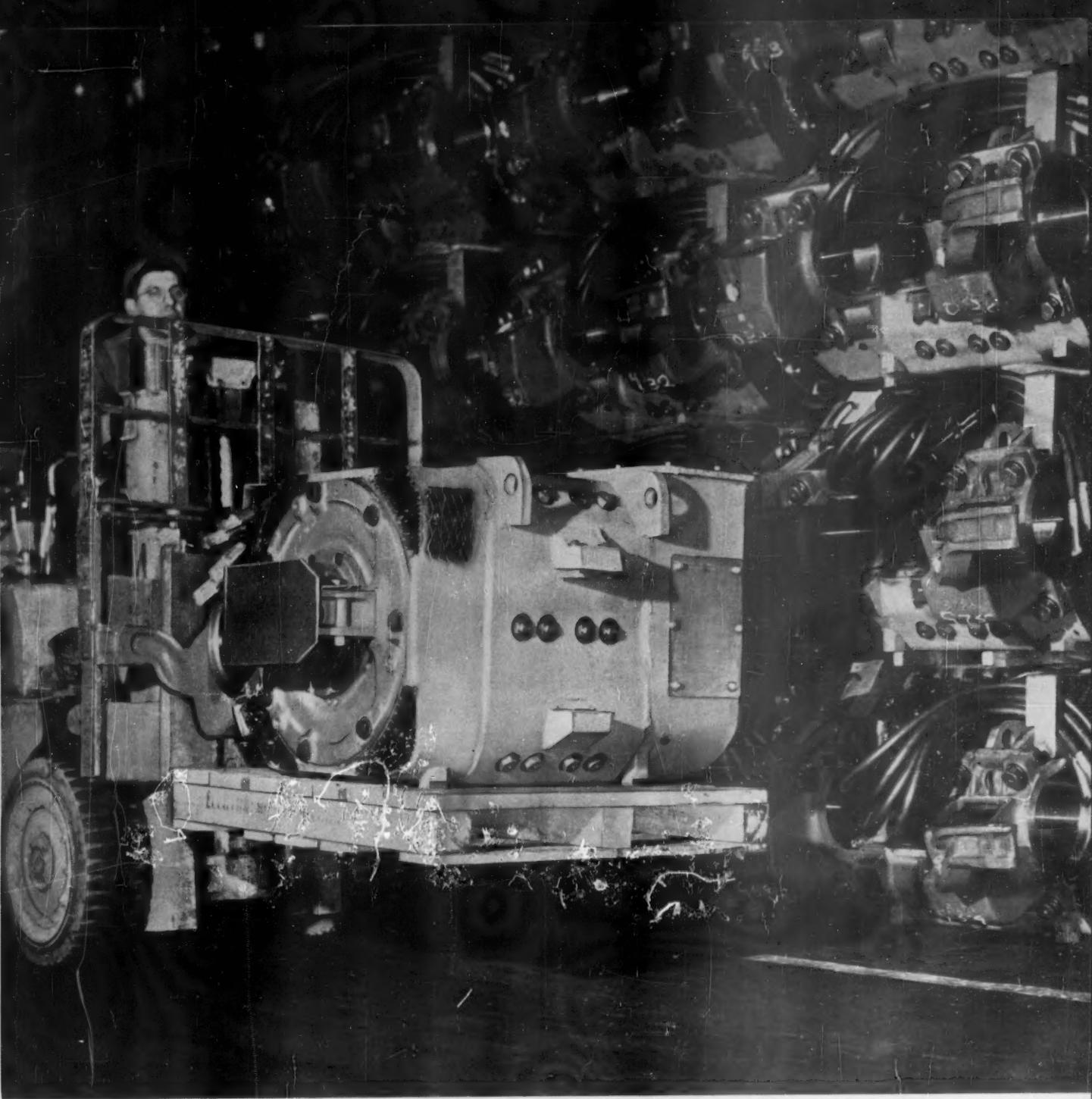
Railroads who take advantage of Electro-Motive "Unit Exchange" can put the money to more productive uses, because "Unit Exchange" not only reduces parts inventories considerably, but often saves unnecessary investment in additional shop facilities.

When traction motors or other major Diesel locomotive components need rebuilding, you simply call for a "Unit Exchange" assembly.

The remanufactured unit you receive incorporates all of the latest design and engineering improvements—and is backed by the same warranty as a brand-new assembly—*in some cases double the warranty of the original!*

The price you pay is the cost of putting the unit you send us into the same first-class condition as the one you received. And the flat-rate charges made possible by volume production with specialized machinery and tools are the lowest you'll find anywhere.

Ask your Electro-Motive Representative for full information on "Unit Exchange."



ELECTRO-MOTIVE DIVISION

GENERAL MOTORS • LA GRANGE, ILLINOIS
Home of the Diesel Locomotive



In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario

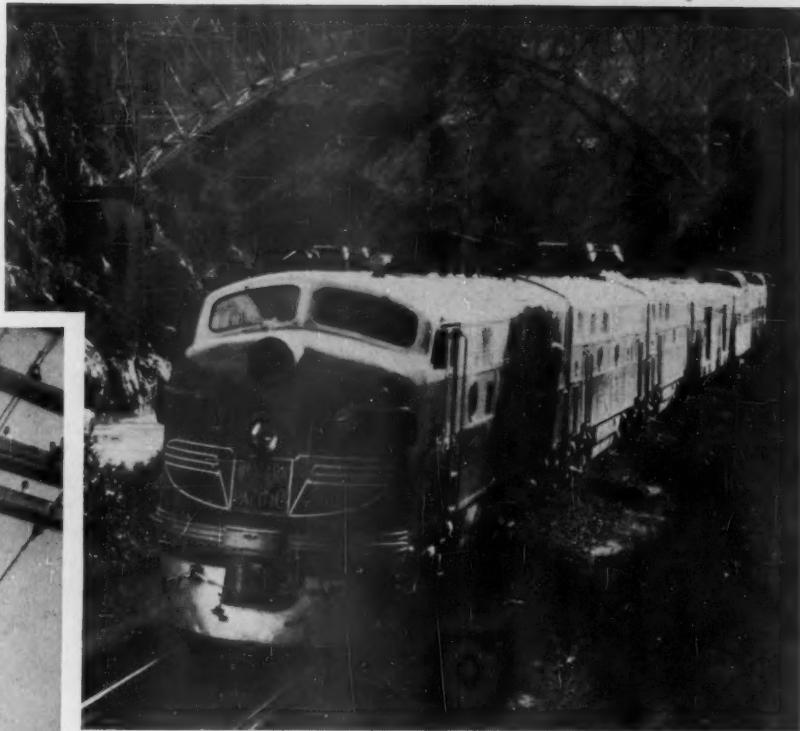
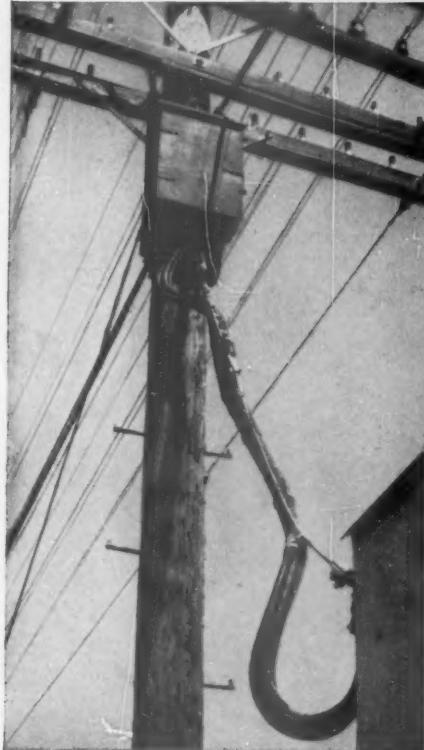


"On-Line" Service for 96% of all
General Motors Locomotives in the United States.



On the Feather River Route of the Western Pacific.

These Okonite-Okoprene Signal Cables installed on Western Pacific right-of-way are continuously exposed to weather extremes.



WESTERN PACIFIC selects OKONITE SIGNAL CABLES for all-weather dependability

The Western Pacific Railroad, in company with over 100 Class I railroads, relies on Okonite-Okoprene cables for dependable, all-weather service on their signal systems. On the San Francisco-Stockton Division, Western Pacific uses Okonite-Okoprene multiple conductor signal cables as laterals from track to signals. This is another example of the vital jobs capably handled by Okonite cables in railroad service.

Okonite insulation, made of natural Up-River Fine Para Rubber, has proved itself in service for over 75 years. It is always vulcanized in a

continuous metal mold to assure a uniform cure. Perfect centering of the conductor is assured by the strip-insulating process. Okoprene, an exclusive Okonite neoprene formulation, protects the cable against weather extremes, alkalies, moisture and acids, as well as mechanical damage and most oils.

Okonite cables have proved themselves in service under the most difficult operating conditions for every important railroad use. Write for Bulletin RA-1078 for information on Okonite cables for railroad use to The Okonite Company, Passaic, N.J.



OKONITE SINCE 1878 *insulated cables*

2628

How to Get \$20 Billion

Railroaders were electrified when, some time back, President Symes of the Pennsylvania said they would have to spend \$20 billion in the next 10 years just to keep up with growth and competition. Surely, \$20 billion is big stuff. The present investment (less depreciation) in the railroads' plant built up over 128 years is but \$7 billion more.

Now, from President Grotz of the Western Maryland, comes a significant policy-exploration speech (Railway Age, June 18, p. 47) which should hearten the industry. Mr. Grotz believes the railroads *can* get the \$20 billion—if certain things, well within practicable limits, are done—and he maps out specific routes toward that goal.

"Outside" Money the IF

Mr. Grotz thinks the \$20 billion can be raised as follows:

- \$7.5 billion from depreciation accruals—based on present accounting practice.
- \$4.0 billion from plowback of earnings—most of which will come from more efficient operation with better tools.
- \$8.5 billion from "outside the railroads."

It is this "outside" source that is a most important and critical problem, and the one on which Mr. Grotz sheds most valued light. He emphasizes that investor interest must be "sold"—like traffic. Investors' enthusiasm for the railroad business, he believes, will be greatly strengthened by an attitude of confidence among its managers and a discard of the "crying towel"; by modern regulation; and by the tempo and drama of technological "innovation." With an "atmosphere of decidedly positive government policies," Mr. Grotz said that up to \$12.5 billion (not more than 10 per cent in sale of stock) could be obtained from investors on favorable terms to cover the \$8.5 billion and to service existing debt.

Definitely *not* conventional for this industry in these times, the WM president's attitude toward debt deserves careful attention. He believes that the creation of added debt "should not be discouraged as a matter of course" and "should be positively encouraged" if it results in earnings so increased as to improve the overall credit position of the carriers.

Mr. Grotz does not think all of the "outside" money must come from investors. Here is the reddest meat in his address: He believes the government, in its role as tax collector, can play a major, positive role in insuring

dynamic railroads for commerce and defense. Some of the ideas he throws out "in an uncharted sea" of carrier-government action are:

- Smoothing out expenses by equalization reserves—with the government, perhaps, assuming part of the risk. (This should even out the "feast or famine" character of railroad purchasing, which is so costly to all concerned.)
- Encouraging investment through accelerated amortization.
- Setting principles of taxation that recognize the increasingly higher cost of replacement.

A fact of life all business faces today is persistent inflation. The railroads' present system of depreciation accounting is premised, as Mr. Grotz points out, on a stable price level—which isn't around any more and is not even in sighting distance. Even within the limits of conventional depreciation accounting, the annual write-off for railroad rolling stock is far lower than those set by their competitors for trucks and for aircraft. When to this low-rate, long-life policy there is added the brutal effect of inflation, the inadequacy of depreciation allowances in relation to taxable profits stands out sharply.

Another Fact of Life

Another prominent fact of life is that, entirely aside from inflation produced by a declining value of the dollar, there is also the inflation imposed by far higher technological standards and faster rate of change than prevailed heretofore. C. W. La Pierre, executive vice-president of General Electric, asserts that "one of our major barriers to the future may not be technological, but financial." High as is the cost of research (about \$5 billion annually for the country), for every dollar so expended about \$10 must be invested in manufacturing and distribution facilities before any of the benefits of research can be realized. It takes about the same amount of money to develop a new jet engine as it did to build a Hoover Dam or a Rockefeller Center.

All business is concerned about the effect of taxation upon the availability of money for keeping the country's industries up to date. Mere replacement alone is an acute problem. Money with which to put into effect the fruits of research comes on top of that. If the problem is difficult for most businesses, how much more critical is it for the railroads—with their much lower earnings, and much smaller turnover of investment?

The job ahead is clear. First, the railroads must join business in general in a drive for a revision of tax policies and allowable accounting procedures affecting them so that taxes will encourage, rather than discourage, plant investment. Business as a whole, especially when it can get the help of its employees, can have considerable influence on the legislators. Second, the railroads must supplement strong participation in this general program with their own campaign for additional and specific changes in policy to meet the problem peculiar to them.

The "if" *can* be taken out of \$20 billion.

"MOLYGREASE" — IS IT . . .

HOT BOXES— Causes and Cures

3

A New Way to Cut Hot Boxes?

Can hot boxes be reduced appreciably by a new grease containing approximately 12% of a powder called molybdenum disulfide?

A survey of 15 roads in various parts of the country indicates that benefits have resulted from this material but that there are also legitimate objections to "molygrease" (see "box" explaining this term).

Of the 15 roads, nine use molygrease to varying degrees; five do not use it; and one does not but soon will use it. The four principal uses are:

1. Following storage or layover, to provide a temporary lubricating film until the journal box is warmed up enough for free oil flow.

2. To provide lubrication to a new brass during wear-in.

3. As a preservative to prevent checking or rust on cars to be stored or on wreck trains which sit for extended periods.

4. To furnish a slippery film over the journal in cold weather to prevent waste packs (or lubricating pads) from sticking to it.

Objections to Molygrease

The roads that do not use molygrease have three principal objections to it:

First, while molygrease may be helpful for breaking in new journal bearings, too much might later interfere with free flow of car oil. While it might give a temporary advantage in getting a car over a couple of divisions, the accumulation is felt by some to be harmful to good journal box operation in the long run.

Second, some officers feel that not enough benefit can reasonably be expected to justify the cost. They think available money can be better spent for other things.

The final objection, from non-users, is that the use of molygrease will make it more difficult to appraise the benefits from some of the more recent AAR recommendations —like controlled clearance bearings, elimination of loose waste and changes in the oil and bearing metal compositions. If too many factors are introduced it will be difficult to determine which are responsible for any improvements.

The AAR itself now takes no stand for or against molygrease. Time has not been available for tests without delaying other journal box research.

The AAR has not seen sufficient evidence to warrant the conclusion that molygrease will help reduce hot boxes.

The association attitude is that molybdenum disulfide is not needed if railroads do what they should to the journal box—and if their practice is deficient, molybdenum disulfide will not pull them through. The AAR also reports complaints from some roads that molybdenum disulfide fouls packing and visual inspection indicates it may coat the waste and interfere with wicking.

As to the preservative effect on journals of cars stored, the AAR feels that insufficient evidence exists. Nor is it felt that the temporary

lubricating film it provides will help much in cars coming out of storage. Free oil poured on the side of the journal after storage takes care of immediate lubrication needs just as well.

Roads That Use Molygrease

Users of molygrease feel just as strongly about its benefits as opponents do about objections to it. The Frisco was among the first to try molygrease on a large scale, and its practice is a good example of the more extensive users. Consumption ranges up to 9,000 lb a month in the summer, less in winter. It is applied at all points where cars are set out and mechanical forces are available.

Molygrease is used strictly in addition to regular journal box oil—it in no way diminishes the amount of free oiling given to the boxes. The Frisco regards its function as entirely distinct from that of regular lubrication—that it prevents metal seizure by providing a lubricated surface until capillary action gives a free flow of oil. Principal value is therefore to provide temporary lubrication to tide the box over the first few miles after leaving a terminal.

The Frisco first began using mo-

HOW NINE ROADS USE MOLYGREASE

Condition	Do	Do Not	Not Definite*
When new brass is applied	5	2	2
When old brass is removed and reapplied	4	2	3
After car lays over in yard	3	3	3
Car returning to service after storage	4	3	3
Car going into storage	3	4	2
Prevent waste sticking to journal in cold weather	2	5	2

*Where practice is under trial, or where, for some reason, the final decision is still to be reached on whether to institute the practice.

lybdenum disulfide on a group of refrigerator cars which required one to three setouts per week. These cars moved empty on a local freight for 44 miles into Springfield, Mo., where they were loaded with cheese and put on a time freight. Despite fall movement and special attention, the rash of hot boxes developed within 25 to 30 miles after leaving.

Investigation revealed that these cars had normally been idle 3 to 8 weeks prior to loading, resulting in etched journals. The condition was not bad enough to cause trouble in the empty movement on the local, but it was not good enough to permit loaded running at high speed. The difficulty was eliminated by applying the molybdenum disulfide.

Following this successful trial the Frisco made the use of molybdenum disulfide systemwide. Before its use, in the last seven months of 1954, the road's average number of miles per hot box was 167,566. The comparable figure for the same period in 1955 using the molybdenum disulfide was 206,237 miles. The Frisco attributes this improved hot box performance to the molygrease, as other factors remained unchanged.

Prevents Rusting in Storage

The Frisco also uses molybdenum disulfide extensively on cars to be put in storage, where it has helped prevent rusting and pitting. The material is applied to such cars while on the siding. In this way the final movement into storage spreads the compound over the entire journal surface.

Journals are also coated upon removal of cars from storage. When the car distributor notifies the local car foreman what cars are to be moved the foreman sends a man in a truck to apply the molygrease.

In general, Frisco officers believe molybdenum disulfide has improved bearing performance during all seasons and intend to continue its use throughout the year.

The Texas & Pacific is another extensive user of molygrease. That road follows about the same practice as the Frisco, except that use of molygrease is restricted mainly to the summertime. While the T&P has found no concrete cases where molygrease has reduced or eliminated hot boxes, officers feel there are fewer hot boxes since using it.

WHAT IS "MOLYGREASE"?

This article deals with a light grease containing molybdenum disulfide, a blue-gray powder of extremely high lubricity. As an aid to journal box lubrication the mixture is marketed under several trade names. Different roads have given it such various generic names as moly, molycoat and molygrease. As molygrease seems to be the most descriptive and most widely used term, it is employed here for the usual journal box mixture of 12%

molybdenum disulfide in grease.

One gallon of this grease services 40 to 50 cars, or up to 400 journals. Railroads have three different ways of applying molygrease—with a bucket and small brush, by round brush that fits a special opening in a conventional oiler's can, and by a caulking gun with a length of small diameter tubing added to reach into the journal box. The latter procedure is becoming the most popular.

During the summer the T&P applies molygrease at all points where mechanical forces are available. It is applied to all cars returning to service from storage and to as many cars in through trains as time will permit. All cars put into storage are given a shot of molygrease for its preservative effect.

Two other lines in the Southwest also use molygrease—the Missouri Pacific and the Kansas City Southern. On the MP the application has been largely experimental and centered about one point. While no direct data has been accumulated, officers say considerable benefit has accrued.

The KCS first tried molygrease on tank cars loaded with acid which developed 47 hot boxes in one single month. This situation was not unlike the cheese cars on the Frisco in that the empty tanks stood idle up to several weeks before loading. The condition was further aggravated by the corrosive atmosphere of the chemical plant. Molygrease eliminated this acute hot box difficulty.

Several roads consider molygrease particularly helpful on tank cars. One theory is that tank cars do not twist to conform to rail irregularities as well as other equipment and therefore produce greater bearing problems. Another factor in tank car difficulties may of course be the dripping of water, acid or other liquids around the journal box.

The only using road to report trouble with molygrease is the Illinois Central. Here soap sometimes separates from the oil in the grease that contains the molybdenum disulfide, and this soap interferes with free flow of journal box oil. The

problem here appears to be one of improving the carrying medium.

Despite this one objection, the IC feels that molygrease will be beneficial in reducing hot boxes. So far the IC applies it to the journal bearing only when cars are repacked or when the wheels are changed out.

Burlington practice is similar to the IC's. Molygrease is applied to both system and foreign cars at all repair points whenever a brass is removed.

A thin layer about 1 in. wide is laid across the top of the brass by brush as an aid to lubrication during the break-in period while the brass is taking a set to conform to the journal diameter.

Molygrease is applied to both new brasses and those removed for inspection and replaced. The Burlington does not use it following layovers or at any other time when the brass is not disturbed. Neither does it use it as a preservative for cars going into storage. It is often applied to cars coming out of extended storage, however.

The Burlington has not made any controlled tests to get accurate figures on how much molygrease has reduced hot boxes, but officers feel that general results indicate its use has been helpful.

Cold Weather Benefits

Some roads in the north indicate that any seasonal emphasis is toward greater benefit from molygrease in the winter. One line in this area uses molygrease on all plain-bearing head-end cars that lay over more than 8 or ten hours during the winter. It is also applied to cars coming

from storage during the winter. It is used the year around on cars that have been standing in the yard and on all cars, whether empty or loaded, that go over the rip track at large intermediate terminals.

Another northern road uses moly-grease on all new brasses, whenever wheels are changed, and on the journals on wreck trains to prevent rust.

Both the accompanying table and the preceding text show that uses of moly-grease vary widely between different roads. The use also varies between different climates. Roads further north place more emphasis on the wintertime value of moly-grease after yard layover. Lines in hotter areas find its principal value in the summer when the hot box problem is at its maximum.

One justified conclusion is that the value of moly-grease is greatest under extremes of temperature.

Differences in specific applications

are perhaps more pronounced than the table indicates. No two of the nine using roads have the same combination of "do's" and "do not's."

Acceptance is greatest for wearing in brasses, least as a preservative for cars going into storage. Usage after layover and to prevent cold weather waste grabs appears greater than the table would indicate.

Is Benefit But Temporary?

Numerically the benefits reported from moly-grease equal the objections to it—four each. Three of the four objections are advanced by non-users; the only disadvantage reported by a user appears to be not too difficult to correct.

The most serious of the non-users' objections is that the benefit from moly-grease is but temporary, whereas the long-range effect may be harmful. Certainly this risk calls for close

observance of moly-treated journals to see if the predicted difficulty materializes.

The other two objections—that the money could better be spent on other things and that use of moly-grease complicates evaluation of other improvements—seem not too important compared to the benefits reported by users. How available money can be spent most judiciously is a decision to be made by each individual road in the light of its own conditions. And the additional complication in evaluating other improvements is a charge that can be levied as well against these other changes.

One impression gained from some of the users is that they are completely convinced that moly-grease has been helpful. It does not seem likely that their minds will be changed without pretty strong evidence to the contrary.

Railroading

After Hours

Value from Conventions

The Railroad Public Relations Association has just held (June 13-16) its fourth annual meeting—as reported elsewhere in this issue—and this year's program chairman (Ralph Champlin, PRR) maintained the organization's high batting average for bringing in high-quality information from "outside," as well as within the craft.

If P.R. people from your railroad attended this meeting, they could use some of their own and their fellow-officers' time in many less profitable ways than in reporting, back home, some of the useful ideas they picked up at the French Lick session.

Among the "outside" talent making heavy contributions of valuable information were George N. Daffern of the CNR's personnel department (a Railway Age contributor of 4 widely read articles in recent issues); Dr. Claude Robinson, head of the Opinion Research Institute; and Willard Pleuthner, the advertising executive of "new idea" fame.

by
James G.
Lyne



Editor,
Railway
Age

at the French Lick PR meeting this year.

Mergers—Pro and Con

The dynamic chief executive of an Eastern railroad has sent along a note, commenting on our June 4 "Forum" article entitled "Do Railroads Need Improved Associations?" He asks whether "regional railroad consolidations" might not provide some part of the answer. The industry could doubtless benefit if some (maybe quite a few) of such mergers were to occur. I've been listening to the consolidation discussion, pro and con, for quite a while and it seems to me that—

It is lots easier for most people to give a ready answer when asked if the A & B would make a good hook-up with the Y & Z, than if they're called on to declare for or against mergers as a general policy.

Many people might favor matrimony over celibacy as a general principle — without necessarily concluding that a particular couple would make ideal life-partners.



Equipment team

with versatile motor grader



... Reshapes Roadway Fast

Synchronized operations by teams using the rubber-tired and crawler-type earthmoving equipment listed below are proving effective in right-of-way grading on the Southern.

First assignment for the team was

to clear and restore slopes on a 12-mile stretch of main line between Columbus, S. C., and Spartanburg. Despite some rock deposits to be "shot" and a large cut to be worked at one end of the project, a six-man

crew moved an average of 4,000 to 5,000 cu yd per 8-hour day.

Specifications for the cut called for a 12-ft roadway and a ditch 9 ft wide at the bottom. From the outside edge of the ditch, the side of the cut was graded to the top, where a service, or berm, ditch was dug.

The Huber-Warco grader started the operation by bank sloping and cutting down loose material. Behind the grader, the three Caterpillar tractors with pan scrapers picked up the material and carried it to a dump area. The round-trip distance to the dump area varied from $\frac{1}{2}$ to one mile. Then, in a series of passes the grader cut the slope down deeper while the pans worked the material at the bottom of the slope. This procedure was continued until the right-of-way area was reshaped.

HERE'S THE EQUIPMENT THE GRADING TEAM USES...

- ... 195-hp Huber-Warco 5D-190 motor grader to bank slopes, cut ditches, maintain roadways.
- ... 3 DW20 Caterpillar tractors to pull 20-yd pan scrapers.
- ... 1 D7 Caterpillar to push pans in loading.
- ... 1 D8 Caterpillar for leveling dump area.
- ... 1 wagon drill to prepare for dynamiting.

How Supervisors Simplify Their Jobs

By GEORGE N. DAFFERN
Research Assistant, Personnel Department
Canadian National

More than 3,000 years ago a leader was in trouble. Moses, in transporting the Jews out of Egyptian bondage, had administration problems. He was bogged down in the process of handling grievances. Fortunately, Moses had a father-in-law who saw the root of the trouble. Jethro knew that Moses was violating some principles of good management: he was trying to do more than he was capable of; he wasn't delegating work sufficiently; and he wasn't developing others for the work.

Jethro then counselled Moses, and Moses reorganized his procedures.

The Bible describes it:

"And Moses chose able men out of all Israel, and made them heads over the people, rulers of thousands, rulers of hundreds, rulers of fifties, and rulers of tens.

"And they judged the people at all seasons: the hard causes they brought unto Moses, but every small matter they judged themselves." *

Today, supervisors in industry still violate principles of good management, and in the process they

wear away, unnecessarily, both themselves and their subordinates. With the amount of management experience since Jethro's day, and with the thinking that has been given the subject, there is no reason for, say, a railroad superintendent to muddle along in his managing. Today, managers have many Jethros to turn to for advice about how to do their jobs.

If we really understand the fundamental points made by one modern Jethro about how to manage, we should be better able to avoid the type of errors Moses made.

Our modern Jethro is Lawrence Appley, president of the American Management Association. In outline, his theme is:

1. Industrial management basically is getting things done through the efforts of other people;
2. Management is more the development of people than the development of things; and
3. To get things done properly calls for planning and control based on the foregoing premises.

Mr. Appley gives six simple steps to effective supervision. With the person involved:

1. Develop outline of functions and operations to be done;
2. Develop statement of results considered satisfactory;

3. Regularly check performance against standards;
4. List corrective action needed to improve performance;
5. Locate the best sources of help and information needed; and
6. Set the timetable for such assistance.

Management, says Mr. Appley, is getting things done through other people. The management of a service industry cannot be unaware of the importance of its employees; so much depends on them to render the service needed. Railroad management certainly seems to be so aware.

Working Through People

The Pennsylvania some time ago took a whole page of advertising in newspapers to make the statement "Railroading Is People"; the New York Central publicized the point "NYC is 95% men, 5% iron." Practically every railroad management is stressing the important role employees play in railroad service.

Perhaps the basic point to appreciate is that nothing happens in railroading except through people. The most powerful diesel locomotive, the most up-to-date computing machine, etc., are dead as door nails until they are put to use by people. It is people who get things done, not machinery or money.

If management people see this basic point clearly, they will better appreciate some important implications that will help simplify their jobs. Systems and techniques should be the servants of the employee rather than his masters. These systems and techniques, usually devised off the job, need to be adapted to people on the job to be effective. The acid test for the system or technique is whether it will work well with people, or better, whether people will

*Exodus, Chapter 19.

Reprints of This Series Will Be Available

This is the fifth and final article in the Railway Age series, "The Better Supervisors Get Promoted." Previous articles appeared in the issues of February 27, p. 18; March 26, p. 22; April 30, p. 37; and May 28, p. 37.

Demand for reprints of the series justifies publication of all the articles in pamphlet form. Prices will be: single copies, 60¢ each; in lots of ten, 55¢ each; in lots of 25, 50¢ each; and in lots of 100, 45¢ each. Please order from: Managing Editor, Railway Age, 30 Church St., New York 7, N. Y. Make checks payable to Railway Age.

work well with it. The latest mechanical accounting procedure, the most refined budget control method, etc., can be made or marred by the employees.

People are not machines—they cannot be automatically controlled. Consequently, control applied to them has to be sensitive, in full consideration of their human perceptions and emotions. Tolerance and understanding are essential in their management; people are not perfect, neither can they be expected to do always exactly as planned. A mechanistic approach to management—the approach which relies on the force of systems, techniques, etc.—is not as effective as the humanistic approach.

Humanistic management does not—and cannot—mean sentimentality and indulgence. Subordinates don't respect weakness, they do not do their best for weak leadership. As Peter Drucker, in his book "The Practice of Management," puts it, to get the right kind of spirit in an organization there must be high performance requirements and no condoning of mediocrity.

Perhaps we can best sum up the point that management is getting things done through people by repeating what one great railroader had to say of his own achievements. Sir Henry Thornton, who had accomplished the almost impossible task of creating the unified Canadian National, said: "In the last analysis the real thing I have done to make the Canadian National Railways a success is to pound, pound, pound, until it is now second nature with the employees to understand that a messenger boy is as important in his sphere as I am in mine, and that the minute a single man slacks on the job a bolt begins to rattle."

Management is more the development of people than the development of things. Moses presumably would have agreed with this second point of Mr. Appley. Railroader J. K. Forbes, a director of the old CB&Q, most likely would have done likewise. In 1875, he wrote: "The great fault of our administration for years has been that we have not been training lieutenants."

If supervisors must get things done through others who can make or mar the service, then the development of service depends on the development of subordinates.

DELEGATION AS THE CNR DOES IT

1. There is careful planning of delegation through:

- a. Discussions with the general superintendent, including regional superintendents' meetings;
- b. Reviews of performance appraisals, job descriptions, etc.;
- c. Other relevant reports and statistics.

2. Subordinates have full scope within their personal capabilities.

3. Subordinates are informed of their scope and understand it clearly.

4. Subordinates are adding to their responsibilities and authorities as their personal capabilities develop.

5. The superintendent is kept fully informed of district operations without undue burden on his part.

6. Responsibility and authority are delegated as far down the line as possible.

7. The district operates effectively whether the superintendent is present or absent.

8. Subordinates are held accountable for their results while the superintendent retains overall accountability.

The emphasis in railroading must swing away from just operating trains to retaining old—and getting new—business through customer service and satisfaction. With this change of emphasis, more attention must be given to earnings, costs, marketing methods, research, and business analysis.

All this cannot take place without a fundamental change in the management team. More individuals on the team must become personally involved in setting objectives, analyzing potential business, planning operations, etc.; they must cease to be merely executors of directions received from seniors. It also means that railroad headquarters must decentralize authorities and responsibilities as never before; headquarters must change their own role from one of day-to-day operations to overall control of long-term operations.

This all adds up to development of people. Let's look at typical railroad supervisors—a group which needs to improve itself before it can expect development of the rank-and-file. By and large, railroad supervisors are a mature, middle-aged group of people. In a typical group of nearly 1,000 supervisors on the CNR, seven out of ten are over 45 years of age.

These supervisors also have, generally, a lot of company service to their credit. Again with CNR as an example, 99 operating supervisors have between them 3,263 years of service, an average of 33 years per person. These 30, 40 or even sometimes 50 years of service constitute both the opportunity and the necessity to supervisors to insure that their subordinates' lifetimes of work are fully worth while—worth while to the subordinates, because a third of the adult lives of each one is far too precious to be treated lightly by people who happen to be in charge; and worth while to the organization, because there is a wealth of human material that often lies dormant in these subordinates.

Planning and Control

Most of us have heard charges that railroads are over-centralized, over-specialized, over-stabilized, and that they suffer from inertia and indecision. If the charges are sometimes correct, most likely the reason is tied up with that word bureaucracy, which has its roots in bureaus and desks.

Some degree of bureaucracy is inevitable in every big corporation. As Perrin Stryker of Fortune wrote in his article "Can Management Be Managed?": "An orderly bureaucracy would in itself be no calamity. Indeed, the real calamity for the large corporation is to become—formally or informally—a disorganized bureaucracy."

Railroads must have a headquarters for central control and they are obliged to have stabilization and specialization. The problem is how to arrange for the necessary close coordination, unity, and interdependence, as well as flexibility, individual resourcefulness and vitality.

Again we have to remember the human factor. Organization planning and control is not arranging a series of charts, job descriptions, and

job specifications. A railroad organization is individuals—at work. All go about their individual tasks, but are coordinated so that their total efforts result in the railroad service. This brings us to the crux of the problem of planning and control. It is the way people work together—or fail to work together—that decides their total achievements and the service rendered.

Leads to Good Planning

We have heard the management man say: "If only I had time to get away from the routines and sit with my feet on the desk, I would be able to plan the job better." Here are two leads to good planning: one concerns what should be done; the other is more of a danger signal. Thinking through what must be done is essential for management, but this is only part of what is essential. The thinking through process needs to take into account the people through whom the action will come. The danger signal? Sitting with one's feet on the desk too long can have undesirable results. Generally, the more a manager sits in his office, the more he loses touch with subordinates on the outside.

Offices and desks seem to have an unfortunate effect on management planners. The more managers are surrounded by such impersonal things the more they seem to forget the human element. Consequently, things often go wrong: the engineer finds the bridge he planned in his office doesn't get completed in exactly the same way and at exactly the same time as he had expected; the accountant finds that his department's reports are not so reliable as he expected, and they don't get into the hands of line officers as quickly as he expected.

General Eisenhower was well aware that he had to have the "feel" of his troops in order to make proper plans. He listed the three benefits from personal visits to his troops: (1) He gained accurate impressions of their state of mind; (2) the practice encouraged the men to talk to their own superiors and, as a result, their officers obtained the products of their men's resourcefulness; and (3) it enhanced efficiency. If such efforts to keep properly informed about the rank-and-file are necessary in warfare, where each

man's life is in danger, then similar efforts are necessary in railroading where life is more secure.

Now let us look at two vital aspects of the way people work together to see if there are some more clues to betterment. These aspects are delegation and decentralization, and staff and line.

Delegation and decentralization certainly provide evidence that management basically is getting things done through other people and that it is more development of people than development of things.

Every supervisor must get service done by other people; i.e., he must delegate. Every supervisor, to delegate, must have developed those to whom he delegates so that they can do the work satisfactorily. As A. E. Perlman, president of the New York Central, has said, the essence of proper delegation is faith and persistence. He wrote recently: "Decentralization in terms of authority takes a considerable amount of skill, persistence, intestinal fortitude, and faith to push responsibility down the chain of command and keep it there. Specialization 'comes naturally.' Decentralization does not come without great effort."

Line and Staff Relations

Faith here means trust in subordinates, a belief that there are other people like ourselves who can do work we are doing; faith in what will happen after the delegation has been arranged; faith in the necessary controls that have to be ready to ensure that the delegated work will be done satisfactorily. Persistence here must mean patient and sustained efforts needed to get over to everyone the necessity for delegation and persistence in the efforts needed for the development of subordinates.

Railroading is becoming more specialized. Railroads need up-to-date technology, such as Operations Research and electronic calculating equipment. Unfortunately, for line and staff relations, specialization had led to there being far more staff people in relation to line people

than ever before—staff people being all those not directly in the line of operations. This has caused friction. Line supervisors say bitterly they are told *how* to do the job by a methods department; *when* to do it by a progress department; *with what* staff by a personnel department; and *for what* wages by a time study department. They claim this leaves them with little authority.

The problem of line and staff relationships is one of the most difficult in industry. So much has happened to bedevil these relationships that improvement is not easy and complete solution may be impossible. However, Mr. Appley's conception of "management the simple way" does help considerably.

If people are the most important power in railroading, and if machinery, techniques, etc., are secondary to people, then persons whose jobs are to devise and service machines, techniques, etc., must also be secondary to persons who actually direct the production line or operating people. Put another way, if people are the most important factor in operations, the supervisors of the people in line operations must be the decision makers where the use of staff specialities are concerned. The decision "will it help in our operations or will it not?" always should be left to line management. It should have the right to use or not to use the services devised by staff people.

There isn't always an easily seen dividing line between advice and authority. But both line and staff officers, if they understand their separate functions properly, can improve matters.

The line officer can help by assuming his full responsibility for the management of his subordinates, including the development of them; he can help by ensuring that staff services are aids to his subordinates, not their controllers; and by ensuring that he and his staff report to one boss only.

The staff officer can help by ensuring that his efforts are recognized
(Continued on page 68)

"It is the way people work together—or fail to work together—that decides their total achievements and the service rendered."

CAT*-powered diesel electric cranes

pay off on



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The heart of these Industrial Brownhoist Cranes are rugged Cat D326 Diesels. They drive GE traction generators supplying current to two double-reduction, axle-mounted motors. Each D326 also drives a compressor and exciter generator.

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Rock Island	2

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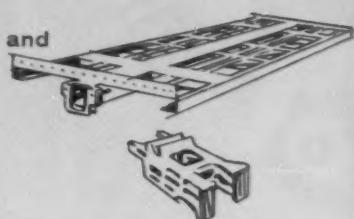
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SUPERVISORS...

(Continued from page 62)

by line people only as services to them; that his budget controls, etc., are line controls and not staff department controls. The staff man can help by understanding that the controls he develops don't give him the right to line authority; and he fails if his speciality cannot be used in line management without him getting into line management himself. The staff officer can help if he realizes that his job is to help improve line management.

Controls

As with planning—the thinking through process—so with control, the checking and correcting process. Cost control, waste control, etc., have to be adapted to human beings to be effective. People are not things, and management controls that are installed with the same conception as a section foreman has when installing a switch are bound to fail. Reports and returns are the eyes and ears of management: but eyes and ears cannot work without the inner motivation of the owner. It is wrong to mistake things used in management control—reports, returns, etc.—for control itself.

Maybe the best way to get this matter of control into focus is to realize that our objective should be to make each railroader his own controller; to get him, *of his own volition*, to do his utmost to improve quantity and quality, to prevent waste, etc. With this conception we shall arrange control systems as aids to each individual rather than as inspection devices of the actions of the individual. We shall arrange controls that enable a man to check his performance against standards and to take necessary corrective action himself.

This vital part of control forms the basis of Mr. Appley's six simple steps, listed at the beginning of this article. It also is the basis of a previous article in this series, "What Makes a Good Supervisor." (Railway Age, March 26, p. 22.) There is no need to go over the same ground, but perhaps we need to take a closer look at the six steps.

The clue to the effectiveness of these supervisory steps lies in the phrase "with the person involved."

Provided this clue is followed, supervision is almost bound to be human and personal and more effective:

1. *Develop outline of functions and operations to be done.* We must think through properly our department's objectives, procedure and assignments, and develop each subordinate's particular contribution with him. To do this will establish close working relations between supervisor and subordinate at the planning stage, the proper place to start such relationships.

2. *Develop statement of results considered satisfactory.* Unless a subordinate knows what his boss considers satisfactory performance from him, he is handicapped, production-wise and morale-wise. On the other hand, a properly developed statement of results expected enables (1) the subordinate to know what he has to do to be satisfactory; (2) the supervisor to know what he must do for the subordinate; and (3) both to realize their interdependence. In addition, when supervisor and subordinate dig into a job deep enough to develop a statement of satisfactory results, things come to light that should not be hidden.

3. *Regularly check performance against standard.* This step is an obvious follow-up to the previous two steps. It is essential if the supervisor is to hold a subordinate accountable for his responsibility and if, at the same time, the supervisor is to indicate his own accountability as the supervisor of that work.

4. *List corrective action needed to improve performance.*

5. *Locate the best sources of help and information needed.*

6. *Set the timetable for such assistance.*

These are essential steps to improve performance through improvement of the performer. In taking these steps, the supervisor demonstrates his own satisfactory performance. As an indication of how important is the task of developing subordinates, Mr. Perlman recently summed up what he called the two-fold goal of the present management reorganization of the NYC: "To provide an organization structure which will permit, first, efficient operation through the full play given to the abilities of the men we place in responsible position; and, secondly, the training and testing of tomorrow's top manager."

Selling

Heading home from their annual meeting a week ago, members of the Railroad Public Relations Association were mulling over a question posed by George N. Daffern of the Canadian National:

"Are we, in realistic and understandable terms, helping each individual translate today's changed concept of our industry into terms of his own job?"

The implications of Mr. Daffern's question fall, in large part, within the realm of the public relations officer. It is no big jump from informed employees to improved service—or from improved service to good "public relations."

Ideas Sink Slowly

As Mr. Daffern sees it, today's "new concept" in railroading is basically one of providing service to suit present and potential customer needs. Management is giving increased attention to long-range planning, to marketing problems, costing and research. More operating jobs are being delegated. There is relatively less emphasis nowadays on what used to be the primary concern—getting trains through regardless.

Yet the meaning and effect of this shift in emphasis is sifting down much too slowly through railroad organizations, Mr. Daffern contends. Supervisors still concern themselves primarily with *how* jobs are done, rather than *why*. The whole area of supervisor-subordinate relationships, he says, needs examining to unplug internal lines of communication and speed the downward flow of new ideas.

Mr. Daffern, a personnel research assistant on the CNR, told the PR officers that the elements which con-

Railroad public relations embraces far more than just getting the company's name in a newspaper. That's an important "line" function, but the big job is a "staff" one—helping create the railroad's total personality. A part of this unending task today is...

Employees the "Changed Emphasis"

tribute to make the "grapevine" so successful as an information "vehicle" on a railroad are almost wholly lacking in "regular" channels. On the "grapevine," he said, messages are transmitted between persons who trust one another, who have close personal relationships and mutual interests. Furthermore, there is a constancy about the "grapevine" because all parties contribute freely and information spreads unhampered to all parts of the organization.

By contrast, "official communications" are opposite in almost every way, Mr. Daffern continued. He cited the lack of personal relationships between supervisors and subordinates and the distrust that can exist between persons and depart-

ments. Communications built on such relationships are largely ineffective, he said.

Look at "Human Factor"

No railroad prefers this situation, Mr. Daffern added, but it exists because "railroaders generally have not learned to appreciate the true value of the human factor. Because of the lack of appreciation of a subordinate's value, there follows a lack of understanding by the supervisor about what should be done to bring about a more effective means of communication.

"Many supervisors concern themselves with individual jobs but overlook the attention they should be



Gilbert H. Kneiss
New President of the RPRA

Members of the Railroad Public Relations Association set up a new "Terminology Committee" a year ago to study railroad terms with an eye to their public relations impact. At the association's convention the other day, the committee came up with its first 11 recommendations:

PRESENT	RECOMMENDED
Automatic Coupler	Standard Coupler (because most now are automatic)
Carrier	Railroad (more modern)
Dead Man Control	Safety Control (avoids bad impression)
Demands	Proposals (avoids bad impression)
Drag	Extra (avoids bad impression)
Grade Crossing	Road Crossing (more clearly understood)
Retarder Yard	Automatic Yard (more accurate)
Solicitor	Freight Salesman (modern usage)
Steam Railroad	No replacement
Team Track	Public Track (avoids bad impression)
Wrecker	Railroad Crane (avoids bad impression)

giving to the people who do the jobs. Worse, because the individual jobs are not done perfectly, and never will be, many supervisors tend to regard their subordinates as people who may let down the service, who must be regarded with misgivings."

This is the kind of thinking that management must overcome, by a "chain reaction" from the top, before internal communications are effective, Mr. Daffern declared. The approach must be on the premise that a subordinate is the "most indispensable and therefore the most valuable factor in railroad service."

PR Paves a Way

While the improvement of internal communications is one essential to sound public relations, there are other significant contributions which the PR officer can make in winning public support for the railroads.

Luther Conant, Jr., president of Conant & Co., and public relations counsel for the Associated Railroads of New Jersey, outlined a case study

of that kind at the PR meeting. Mr. Conant described the work of the New Jersey railroads in their efforts to reduce high state and local taxes—a campaign in which an 18-month PR program has preceded any direct efforts to obtain legislative relief.

"We set a long-range goal of creating an atmosphere in which the slate legislature could vote for railroad tax reductions or broad reforms that achieve the same result," Mr. Conant reported.

He went on to say that the 11 member roads of the N.J. association have pushed their campaign for public support through newspapers, pamphlets and speeches; and the response, measured in terms of editorial response, surveys and letters has been highly favorable.

Today there exists in New Jersey "a far more articulate recognition of our taxation problem than would have seemed possible when we began," Mr. Conant said. As a result, the association now is ready to move into the second and final phase of the campaign: "to secure very substantial reduction of our taxes through direct remedial legislation and/or through basic tax reforms of benefit to the whole state."

Railroad public relations, as an industry-wide program, will be 21

years old in 1957. But the approach of maturity has not lessened one consistent headache— inadequate funds to do an effective job of telling the railroad story.

B. E. Young, assistant to president of the Southern and outgoing president of RPRA, hit this problem in his keynote speech.

"I'm not going to say how much is needed, or for what," Mr. Young said. "But I think a little figure-studying is in order. Back in 1935, for example, when net income totaled only \$7.5 million, the presidents voted \$1,225,000 of those fat depression dollars for an industry public relations program.

"Last year, with net income topping \$900 million, with advertising and related costs sky-high, our presidents voted \$1,700,000 of those anemic fifty-cent dollars.

"If there is any conclusion to be drawn from that comparison, perhaps it is this—we are being asked to pierce the thick hide of the rhinoceros with 'BB' shot," Mr. Young declared.

Elsewhere in the three-day session, the public relations officers heard Warren W. Brown, president of the Monon, outline, as he put it, "some of my ideas about the future of railroad public relations." High among

these, Mr. Brown suggests that public relations officers should not be given the "lone responsibility of interpreting company policy," but should be given a voice in determining such policy.

"My impression is that in too many instances today PR men are relegated to the state where they interpret company policy as they are told to interpret it and *when* they are told to interpret it," Mr. Brown said. "It hardly seems out of order that we should set as a goal the elevation of this condition to the point where PR men help determine company policy, dictate how it will be interpreted, dictate when it will be interpreted."

New Officers

Succeeding Mr. Young as president of RPRA for 1956-57 is Gilbert H. Kneiss, assistant to president—public relations, Western Pacific. Regional vice-presidents for the coming year are Ralph C. Champlin, vice-president of public relations, Pennsylvania, in the East; William E. Hayes, executive assistant—public relations, Rock Island, in the West, and B. M. Sheridan, assistant vice-president—public relations, Gulf, Mobile & Ohio, in the South.

Railway Officers

BOSTON & MAINE.—John W. Brackett, chief of personnel, Boston, appointed manager—labor relations, reporting to operating vice-president, and his former position abolished. William J. Ahearn, Daniel J. Orr and Donald F. Ellingwood, supervisors of schedules, appointed assistant managers—labor relations, and their former positions abolished. Harvey J. Blanchet, chief passenger crew dispatcher, appointed assistant manager—labor relations, with system-wide responsibility for all matters pertaining to passenger train crews. Raymond S. MacDonald, chief freight car distributor, appointed manager freight car utilization, Boston. George F. Gallagher, passenger car distributor, appointed acting superintendent passenger transportation, Boston.

CHICAGO GREAT WESTERN.—The following appointments were announced at Chicago: E. J. Forster, freight traffic manager; H. O. Malm, assistant freight traffic manager; F. K. Brennan, and J. I. Metzger, general freight agents.

CHICAGO & NORTH WESTERN.—Lawrence L. Steuber appointed general superintendent, car department, and Richard E. Powers named car shop superintendent. Mr.



Donald D. Warren

Steuber and Mr. Powers formerly served with the New York Central at East Rochester, N. Y., as, respectively, superintendent and general foreman of the Despatch car shop.

Donald D. Warren, freight agent

at Omaha, Neb., appointed to newly created position of superintendent of stations, Chicago. Peter P. Pell, general foreman, 16th Street freight station, Chicago, named assistant superintendent of stations.

GREAT NORTHERN.—Hermie T. McBride, general agent at Dallas, transferred to Denver, to succeed Carl C. Conradi, retired. Wilfred C. Hageman, city freight agent at Spokane, Wash., succeeds Mr. McBride. Wilfred G. Harold, city freight and passenger agent at Nelson, B. C., appointed general agent, freight department at Vancouver, B. C., replacing Alfred H. Hebb, retired.

ILLINOIS CENTRAL.—Charles E. Weller, division engineer at Jackson, Tenn., transferred to Waterloo, Iowa, to succeed N. R. Hill, retired. Mr. Weller's successor is Newell R. Forbes, division engineer at Memphis, who in turn is replaced by Thomas D. Kern, assistant to division engineer at Vicksburg, Miss.

Fred Heimlicher, Jr., freight traffic manager at St. Louis, promoted to freight traffic manager at Memphis, succeeding J. Ralph MacLeod, retired. Jack H. Butridge, general



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Dallas, promoted to vice-president, effective August 1, succeeding **Marshall D. Cloyd**, executive vice-president, who retires September 1.



James J. Finegan

J. Kobren appointed terminal trainmaster at El Paso, Tex., succeeding **R. L. Myers**, retired.

TOLEDO, PEORIA & WESTERN.—**Randle H. Egbert**, chief engineer, named chief engineer and mechanical officer.

Elmer F. Alberts named manager-rates.

UNION PACIFIC.—**Wilson D. Haring**, freight traffic agent at Philadelphia, named general agent there, succeeding the late **Millard A. Light**.

C. H. Burnett, superintendent, Idaho division at Pocatello, Ida., transferred to Nebraska division at Omaha, succeeding **J. E. Mulick**, appointed chief rules examiner. Mr. Burnett's successor is **O. A. Durrant**, assistant superintendent, Nebraska division, who in turn is replaced by **W. E. Ross**, trainmaster at Rawlins, Wyo. **J. R. Johnson**, safety and courtesy representative at Ogden, Utah, replaces Mr. Ross. **D. E. Moore**, safety and courtesy representative at Grand Island, Neb., appointed trainmaster there.

WESTERN MARYLAND.—**Bradley T. McCoy**, treasurer, retires July 1. **Edward C. Lanahan**, secretary, named secretary and treasurer, Baltimore, Md.

WINSTON-SALEM SOUTH-BOUND.—**F. E. Dickerson** appointed general superintendent at Winston-Salem, N. C., succeeding **C. W. Russell**, retired. Mr. Dickerson was formerly agent—yardmaster, **Norfolk & Western** at Durham, N. C.

OBITUARY

Joseph M. Strupper, 74, retired assistant vice-president of the **Frisco**, died June 15 at St. Louis.

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freight agent at St. Louis, succeeds Mr. Heimlicher, and in turn is succeeded by **William R. Scruggs**, assistant general freight agent at St. Louis.

NORFOLK & WESTERN.—**F. P. Pelter, Jr.**, assistant trainmaster—roadmaster, Buchanan branch, named trainmaster, Shenandoah division, succeeding **J. W. Sandridge**, appointed to new post of rules supervisor, office of vice-president and general manager.

G. W. Meredith, master mechanic, Shenandoah and Radford divisions, promoted to new position of assistant general master mechanic. **M. R. Francis**, general boilermaker, succeeds Mr. Meredith as master mechanic. **H. L. Scott, Jr.**, mechanical inspector, appointed to new post of assistant master mechanic, Norfolk division.

R. P. Ellett, auditor of station accounts at Roanoke, named auditor of revenues at that point, succeeding **J. W. Rhodes**, retired. **J. J. O'Connor**, assistant to auditor of revenues, replaces Mr. Ellett.

J. N. Hanes, general baggage agent, Roanoke, retired May 31, and that post abolished. **R. K. Hubbard** appointed assistant general passenger agent at Roanoke.

TEXAS & PACIFIC.—**James J. Finegan**, assistant to president at



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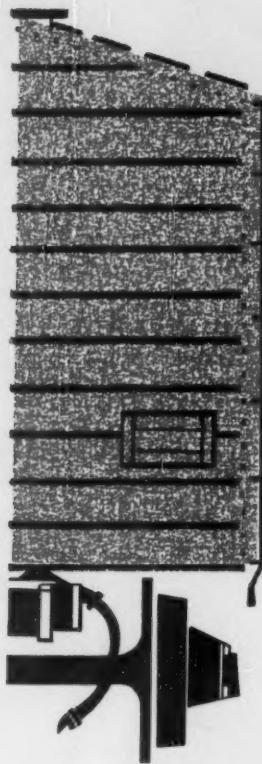
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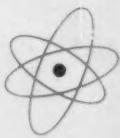
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